ALAN M. ARAKAWA
Mayor

DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

July 22, 2015

Jessica Wooley, Director
Office of Environmental Quality Control
Department of Health, State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

SUBJECT: FINAL ENVIRONMENTAL ASSESSMENT (EA) FOR PROPOSED IAO WATER TREATMENT PLANT UPGRADES AT TMK NOS.: (2)3-5-001:067(POR.) AND 091(POR.)

Dear Ms. Wooley:

With this letter, the County of Maui, Department of Water Supply hereby transmits the final environmental assessment and finding of no significant impact (FEA-FONSI) for the Proposed Iao Water Treatment Plant Upgrades situated at TMK Nos: (2) 3-5-001:067 (por.) and 091 (por.), in the Wailuku District on the island of Maui for publication in the next available edition of the Environmental Notice.

The County of Maui, Department of Water Supply has included copies of public comments and the corresponding responses from the applicant that were received during the 30-day public comment period on the draft environmental assessment and anticipated finding of no significant impact (DEA-AFONSI).

Enclosed is a completed OEQC Publication Form, two copies of the FEA-FONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

If there are any questions, please contact Tessa Munekiyo Ng of Munekiyo Hiraga at (808) 983-1233.

Sincerely,

DAVID TAYLOR, P.E.
Director

Attachments
cc: Ivan Nakatsuka, Austin Tsutsumi & Associates, Inc. (w/one copy of Final EA)
Tessa Munekiyo Ng, Munekiyo Hiraga (w/out attachments)
EA File

"By Water All Things Find Life"

AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (FEBRUARY 2013 REVISION)

Project Name	Proposed Iao Water Treatment Plant Upgrades
Island:	Maui
District:	Wailuku
TMK:	(**2)3-5-001:067(por.) and 091 (por.)**
Permits:	Building Permit, Grading Permit, NPDES permit, and Project District Development Applications, Phase II and III
Proposing/Determination Agency:	County of Maui
(*Address, Contact Person, Telephone*)	Department of Water Supply 200 South High Street, 5th Floor Wailuku, Hawaii 96793; Contact Person: Dave Taylor, Director; Telephone: (808) 270-7816
Accepting Authority: *(for EIS submittals only)*	Not Applicable
Consultant:	Munekiyo Hiraga
(Address, Contact Person, Telephone)	305 High Street, Suite 104, Wailuku, Hawaii 96793: Contact Person: Tessa Munekiyo Ng, Vice President; Telephone: (808) 983-1233

Status (check one only):

__DEA-AFNSI	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.
_X_ FEA-FONSI	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__FEA-EISPN	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.
__Act 172-12 EISPN	Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
__DEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
__FEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__ Section 11-200-23 Determination	The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.
__Section 11-200-27	

Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page)**:**

The County of Maui, Department of Water Supply (DWS) proposes to replace/relocate the existing Iao Water Treatment Plant (WTP). The Iao WTP will be on West Alu Road near its intersection with Iao Valley Road and West Main Street on a portion (approximately 2.6 acres) of a parcel identified as Tax Map Key (TMK) (2) 3-5-001:067. Access to the site will be off West Alu Road through the adjacent parcel, TMK (2) 3-5-001:091.

The currently vacant and undeveloped project site which is owned by RCFC Kehalani LLC, lies adjacent to an existing Maui Electric Company, Ltd. (MECO) substation and the existing DWS's WTP and 3.0 million gallon Iao Tank site. The existing WTP produces approximately 1.7 million gallons per day (mgd) of treated water. The new WTP will produce approximately 3.2 mgd of treated water.

Existing temporary membrane filtration units on the existing WTP site were initially sheltered within a large tent that has since been removed leaving the units exposed to the elements for a number of years. Therefore, replacement of the units was deemed necessary by DWS. Also, the water treatment production capacity needs to be increased to meet future projected population demands.

Final Environmental Assessment

PROPOSED IAO WATER TREATMENT PLANT UPGRADES

(TMK (2)3-5-001:067 (por.) and 091 (por.))

Prepared for the Approving Agency:

County of Maui,

Department of Water Supply

July 2015

MUNEKIYO HIRAGA

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LIST OF FIGURES

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LIST OF APPENDICES

LIST OF ACRONYMS

2010 D&O	June 10, 2010 Commission on Water Resource Management Findings of Fact, Conclusions of Law and Decision and Order
AFONSI	Anticipated Finding of No Significant Impact
ALISH	Agricultural Lands of Importance to the State of Hawaii
BMP	Best Management Practice
CCT	Chlorine Contact Tank
CFS	Cubic Feet Per Second
CWRM	Commission on Water Resource Management
CZM	Coastal Zone Management
DLIR	Department of Labor and Industrial Relations
DOE	Department of Education
DWS	Department of Water Supply
DWSRF	Drinking Water State Revolving Fund
EA	Environmental Assessment
FEMA	Federal Emergency Management Agency
HAR	Hawaii Administrative Rules
HC&S	Hawaiian Commercial & Sugar Company
HRS	Hawaii Revised Statutes
Hui/MTF	Hui O Na Wai Eha and Maui Tomorrow Foundation, Inc.
IIFS	Interim Instream Flow Standards
KMD	Kehalani Mauka Development
LSB	Land Study Bureau
MECO	Maui Electric Company, Ltd.
MG	Million Gallons
mgd	Million Gallons per Day
MIP	Maui Island Plan
MSL	Mean Sea Level
NRCS	Natural Resources Conservation Service
OHA	Office of Hawaiian Affairs
PDR	Preliminary Drainage Report
PER	Preliminary Engineering Report
RGB	Rural Growth Boundary
rRR	Rough Broken Land
SCS	Scientific Consulting Services
SHPD	State Historic Preservation Division
SMA	Special Management Area
SRB	Small Town Boundary
SWUPA	Surface Water Use Permit Applications
SWUPA-E	Surface Water Use Permit Application Existing Use
SWUPA-N	Surface Water Use Permit Application New Use
TPB	Treatment Plant Building
TMK	Tax Map Key
UGB	Urban Growth Boundary

USDA	U. S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WUDP	Water Use and Development Plan
WTP	Water Treatment Plant
WUP	Water Use Permit
WvB	Wailuku Silty Clay, 3-7 percent slopes (soil type)
WWC	Wailuku Water Company
WWRD	Wastewater Reclamation Division
WWRF	Wastewater Reclamation Facility
WWTP	Wastewater Treatment Plant

Executive Summary

Project Name:	Proposed Iao Water Treatment Plant Upgrades
Type of Document:	Final Environmental Assessment
Legal Authority:	Chapter 343, Hawaii Revised Statutes
Agency Determination:	Finding of No Significant Impact (FONSI)
Applicable Environmental Assessment review "Trigger":	Use of State and County Funds Use of County Lands
Location:	Island of Maui Wailuku TMK No.: (2)3-5-001:067 (por.) and 091 (por.)
Applicant:	County of Maui Department of Water Supply 200 South High Street, 5th Floor Wailuku, Hawaii 96793 Contact: Thomas Ochwat Phone: (808) 270-7816
Approving Agency:	County of Maui Department of Water Supply 200 South High Street, 5th Floor Wailuku, Hawaii 96793 Contact: David Taylor, Director Phone: (808) 270-7816
Consultant:	Munekiyo Hiraga 305 High Street, Suite 104 Wailuku, Hawaii 96793 Contact: Tessa Ng, AICP, Vice President Phone: (808) 983-1233

Project Summary:

The County of Maui, Department of Water Supply (DWS) proposes to replace the existing Iao Water Treatment Plant (WTP) with a new WTP. The Iao WTP is located on West Alu Road near its intersection with Iao Valley Road and West Main Street on a portion of a parcel identified as Tax Map Key (TMK) (2)3-5-001:067. Access to the site will be provided by a driveway off of West Alu Road through the adjacent parcel, TMK (2)3-5-001:091. The existing WTP, which is located at the site of DWS' 3.0 million gallon Iao Tank, consists of three (3) pressure membrane units that produce approximately 1.7 million gallons per day (mgd) of treated water. The existing membrane filtration units were meant to be temporary, and were initially sheltered within a large tent that has since been removed, leaving the units exposed to the elements for a number of years. Therefore, replacement of the units and a permanent structure were deemed necessary by DWS.

The proposed project involves installing new membrane filtration units within a building to produce an average of up to 3.2 mgd of treated water on approximately 2.6 acres of Parcel 67. The treated water flow from the WTP of 3.2 mgd is in accordance with an agreement between DWS and Wailuku Water Company, LLC (WWC), which allows for DWS to withdraw up to 3.2 mgd of water over a 24-hour period from the Iao-Waikapu Ditch. This amount is exclusive of the backwash water from the treatment plant process, as long as the backwash water is placed back into WWC's water system. The new WTP will treat approximately 3.4 mgd of raw water from the ditch to produce 3.2 mgd of treated water. The difference of approximately 140,000 gallons per day is the treated water being used for backwashing and cleaning of the membranes, which will be placed back into WWC's water system by ultimately being discharged into WWC's Waihee Ditch. The proposed WTP will include a Treatment Plant Building, Chlorine Contact Tank, Sludge Lagoon, and other accessory equipment and facilities.

The project site is part of a large parcel (Parcel 67) owned by RCFC Kehalani LLC. DWS is in the process of acquiring the land for the Iao WTP. Access to the site will be provided by a driveway off of West Alu Road through the adjacent parcel, TMK (2)3-5-001:091. DWS intends to purchase this adjacent Parcel 091 (Lot T-1) from owner RCFC Kehalani LLC.

The Iao WTP project will be funded by the State of Hawaii and County of Maui. The use of public funds and lands is a trigger for the preparation of an Environmental Assessment (EA) pursuant to Chapter 343, Hawaii Revised Statutes (HRS) and Section 11-200, Hawaii Administrative Rules (HAR).

I. PROJECT OVERVIEW

I. PROJECT OVERVIEW

A. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

The Maui County, Department of Water Supply (DWS) proposes to replace/relocate the existing Iao Water Treatment Plant (WTP) with a new WTP. The Iao WTP will be located on West Alu Road near its intersection with Iao Valley Road and West Main Street on a portion of a parcel identified as Tax Map Key (TMK) (2)3-5-001:067 (Parcel 67). See **Figure 1**. Access to the site will be provided by a driveway off of West Alu Road through the adjacent parcel, TMK (2)3-5-001:091 (Parcel 91).

The project site is currently vacant and undeveloped. It lies west of and adjacent to an existing Maui Electric Company, Ltd. (MECO) substation and the existing WTP site. The existing WTP, which is located at the site of DWS's 3.0 million gallon Iao Tank, produces approximately 1.7 million gallons per day (mgd) of treated water. See **Figure 2**.

The project site is part of a large parcel (Parcel 67) owned by RCFC Kehalani LLC. Approximately 2.6 acres will be utilized from Parcel 67 for the proposed project. DWS is in the process of acquiring the land for the Iao WTP. The adjacent parcel, TMK (2)3-5-001:091, through which access will be provided, is also owned by RCFC Kehalani LLC. DWS intends to purchase this parcel as well. If construction of the proposed WTP occurs prior to the purchase, DWS will acquire a temporary construction easement for the driveway and waterlines through Parcel 091.

B. PROJECT NEED

The existing WTP consists of three (3) pressure membrane units that produce approximately 1.7 million gallons per day (mgd) of treated water. The existing membrane filtration units were meant to be temporary, and were initially sheltered within a large tent that has since been removed, leaving the units exposed to the elements for a number of years. Therefore, replacement of the units and a permanent structure were deemed necessary by DWS. The proposed Iao WTP will be built to produce approximately 3.2 mgd of treated water to meet future projected population demands. See **Appendix "A"**, Preliminary Engineering Report (PER).

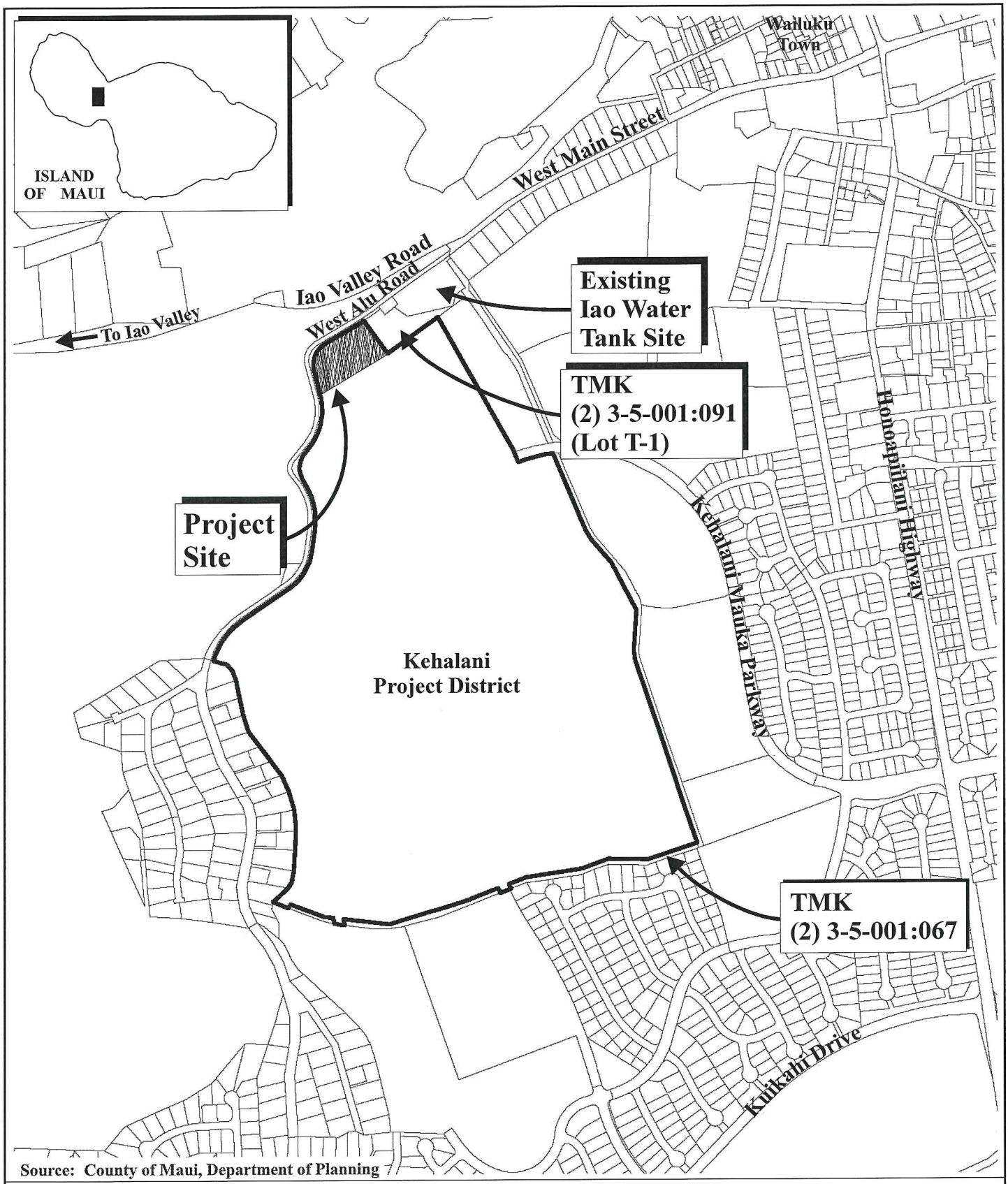


Figure 1 Proposed Iao Water Treatment Plant Upgrades

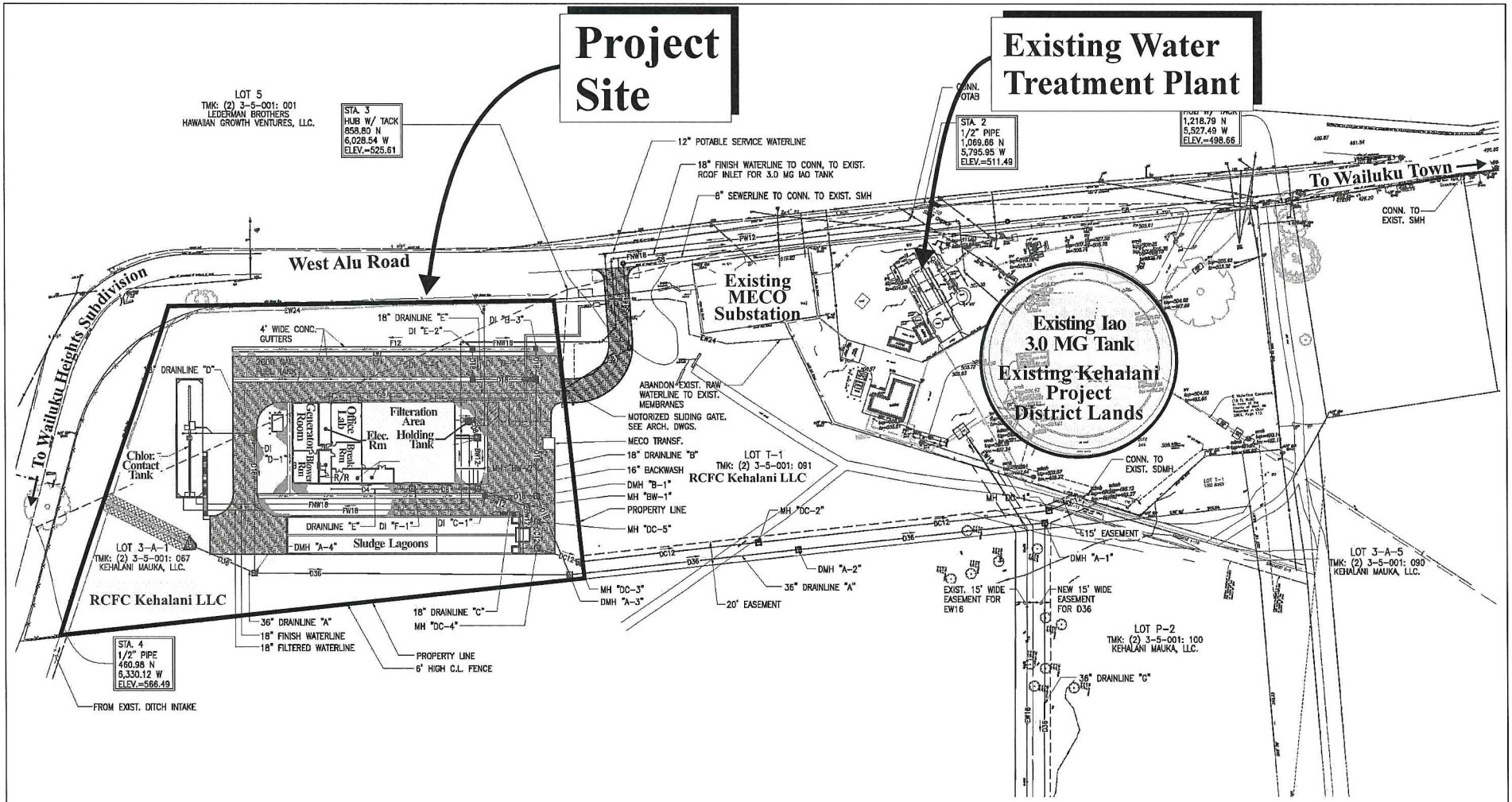
Regional Location Map

0 400 Feet
200 800

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\Regional



Source: Austin, Tsutsumi & Associates, Inc.

Figure 2 Proposed Iao Water Treatment Plant Upgrades

Site Plan

NOT TO SCALE

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\Site Plan

C. PROPOSED ACTION

DWS proposes to replace the existing Iao WTP with a new WTP. This project will involve installing new membrane filtration units within a building to produce an average of up to 3.2 mgd, which is based on a maximum average raw water flow to the WTP of approximately 3.4 mgd, in accordance with an agreement between DWS and Wailuku Water Company, LLC.

The major components for the project will be as follows:

- The Treatment Plant Building (TPB) which will include a "Filtration Area" as well as separate rooms for office/laboratory, break room with restroom, storage rooms, electrical room, and generator room. The Filtration Area will house four (4) membrane filtration units. Other equipment will also be housed in the Filtration Area.
- An aboveground 2,000 gallon diesel fuel tank as part of the generator system.
- A dual-compartment Sludge Lagoon constructed of concrete to contain the backwash water and other discharge waters from the membrane treatment process.
- A Chlorine Contact Tank (CCT) that allows for disinfection of the filtered water with sodium hypochlorite to produce the finish water.
- A finish water line from the CCT to a connection point with an existing pipe that discharges into the Iao Tank through a roof inlet. A portion of this water line would be within West Alu Road.
- A gravity wastewater line from the restroom within the TPB to the uppermost existing sewer manhole on South Alu Road.
- A drainage system that would convey on-site runoff and off-site runoff that currently discharges on to the project site to a connection point with the Kehalani Parkway storm drain system.

Refer to **Figure 2** and see **Appendix "B"**, Preliminary Plans.

Upon completion of the new WTP facility, the existing Iao WTP will be decommissioned.

D. PROJECT COSTS AND IMPLEMENTATION

The cost of the proposed project is estimated to be $12 to $15 million. Construction of the Iao WTP is anticipated to begin in the summer of 2016 and take approximately two (2) years to complete.

E. CHAPTER 343, HAWAII REVISED STATUTES (HRS) REQUIREMENTS

The Iao WTP project will be funded by the County of Maui and State of Hawaii and the use of County lands. The use of public funds and lands triggers compliance with the Hawaii Revised Statutes (HRS), Chapter 343 requirements. Therefore, this Environmental Assessment (EA) is being prepared pursuant to Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Environmental Impact Statement Rules to evaluate the proposed project's technical characteristics, environmental and socio-economic impacts, and alternatives, as well as to advance findings relative to the significance of the project's potential impacts and proposed mitigation measures. The Approving Agency for the EA is the DWS.

II. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

II. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

A. PHYSICAL SETTING

1. Surrounding Land Uses

a. Existing Conditions

The existing Iao Water Treatment Plant is located west of Old Wailuku Town and west of the intersection of Iao Valley Road and West Alu Road at the entrance to Iao Valley. The proposed project site is currently vacant and undeveloped. The site is west of and adjacent to a MECO substation and the existing Iao WTP site. The surrounding area to the south of the project site is currently vacant and undeveloped. Land to the south is proposed to be developed as part of the Kehalani Project District.

Wailuku Town is located further north and east of the project site, beyond the Kehalani Mauka development. Wailuku serves as the County seat and the primary location of many State and Federal offices. Wailuku Town is also characterized by a mix of commercial uses, including offices, shops, and restaurants. The existing residential developments of Wailuku Heights and Kehalani are located further west and south, respectively, to the project site. Additionally, there are existing single-family residences located further east of the project site.

b. Potential Impacts and Mitigation Measures

The proposed project involves replacement of the existing Iao WTP. The project site is on lands that are undeveloped. As such, its specific siting provides a buffer from nearby residential homes of which the closest home is approximately 600 feet away. Furthermore, the construction of the proposed improvements to the Iao Water Treatment Plant facilities represents an augmentation of the existing system to increase productivity.

Due to the nature of the proposed project, the proposed action is not anticipated to have adverse impacts to existing land uses in the vicinity.

DWS is coordinating with RCFC Kehalani LLC on future development of Kehalani Project District adjacent to the project site.

2. Climate

a. Existing Conditions

Like most areas of Hawaii, the climate in Wailuku is relatively uniform year-round. Characteristic of Maui's climate, the project site experiences mild and uniform temperatures, moderate humidity and relatively consistent northeasterly tradewinds. This stability is attributed to Maui's tropical latitude, relative to the Pacific anticyclone and storm tracts, and the surrounding ocean currents. Variations in climate among the different regions in Maui are largely due to local terrain.

Historically, in the region, daily temperatures range from an average low of 67 degrees Fahrenheit (measured at Kahului Airport) to an average high of 84 degrees Fahrenheit. The warmest month is August while the coolest month is February (County of Maui, Office of Economic Development, 2011).

Rainfall in the region is seasonal, with most precipitation occurring between October and March. Annual rainfall data for Central Maui shows an average of 18.49 inches (County of Maui, Office of Economic Development, 2011).

b. Potential Impacts and Mitigation Measures

The proposed project is limited to the replacement of the existing water treatment facilities. As such, significant adverse impacts to climatic conditions are not anticipated as a result of the proposed project.

3. Agricultural Lands

a. Existing Conditions

In 1977, the State of Hawaii, Department of Agriculture developed a classification system to identify Agricultural Lands of Importance to the State of Hawaii (ALISH), based primarily, though not exclusively, on soil characteristics of the underlying land. The three (3) classes of ALISH lands are "Prime", "Unique", and "Other Important" agricultural land, with the remaining non-classified lands termed "Unclassified". When utilized with

modern farming methods, "Prime" agricultural lands have soil quality, growing season, and moisture supply needed to produce sustained crop yields economically; while "Unique" agricultural lands contain a combination of soil quality, growing season, and moisture supply to produce sustained yields of a specific crop. "Other Important" agricultural lands include those important agricultural lands that have not been rated as "Prime" or "Unique".

The project site is located on lands that are designated as "Prime" by the ALISH map. See **Figure 3**.

Additionally, the University of Hawaii, Land Study Bureau (LSB) developed the Overall Productivity Rating, which classified soils according to five (5) levels, with "A" representing the class of highest productivity soils and "E" representing the lowest. The LSB does not classify the lands underlying the proposed project site. See **Figure 4**.

The project site and surrounding areas were cultivated with sugar cane from the mid-1800s through the 1990s. When sugar production ended in the 1990s, the area was converted to cattle grazing. Grazing activity ended approximately nine (9) years ago. The site is currently zoned within the County's "Project District 3, Wailuku". Currently, the project site and surrounding areas to the south and west, are vacant with no active agricultural activities.

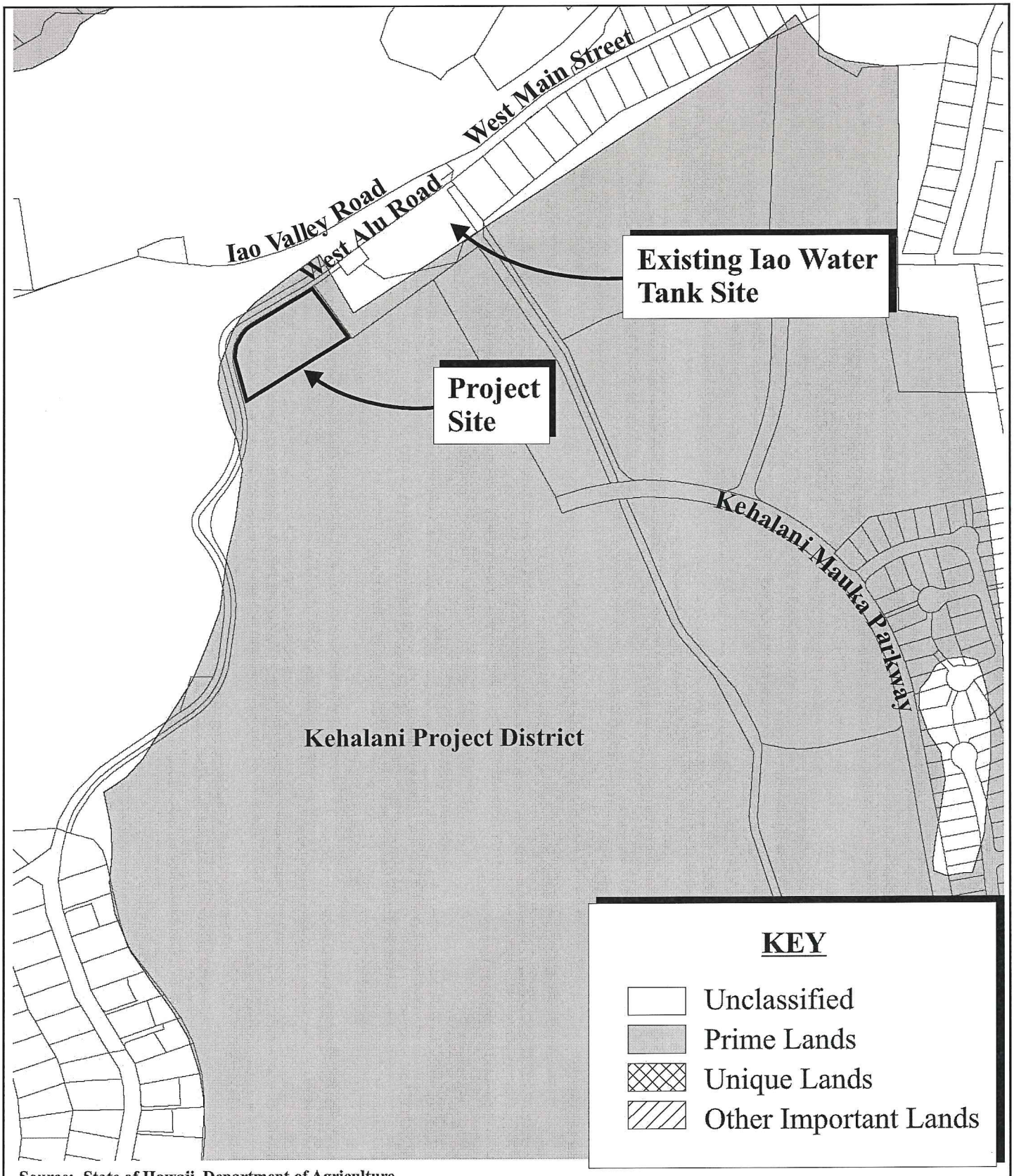
b. Potential Impacts and Mitigation Measures

The site is designated within the "Project District 3, Wailuku" area and has not been in active agricultural production since 1992. Given the discontinued agricultural use at the site and the land's designation for urban use, adverse impacts to agricultural productivity are not anticipated as a result of the proposed project.

4. Topography and Soils Characteristics

a. Existing Conditions

The project site slopes in the west to east (mauka to makai) direction, with approximate ground mean sea level (msl) elevations being 560 feet at the upper end to 508 feet at the lower end. See **Appendix "C"**, Drainage Report.



Source: State of Hawaii, Department of Agriculture

Figure 3

Proposed Iao Water Treatment Plant Upgrades

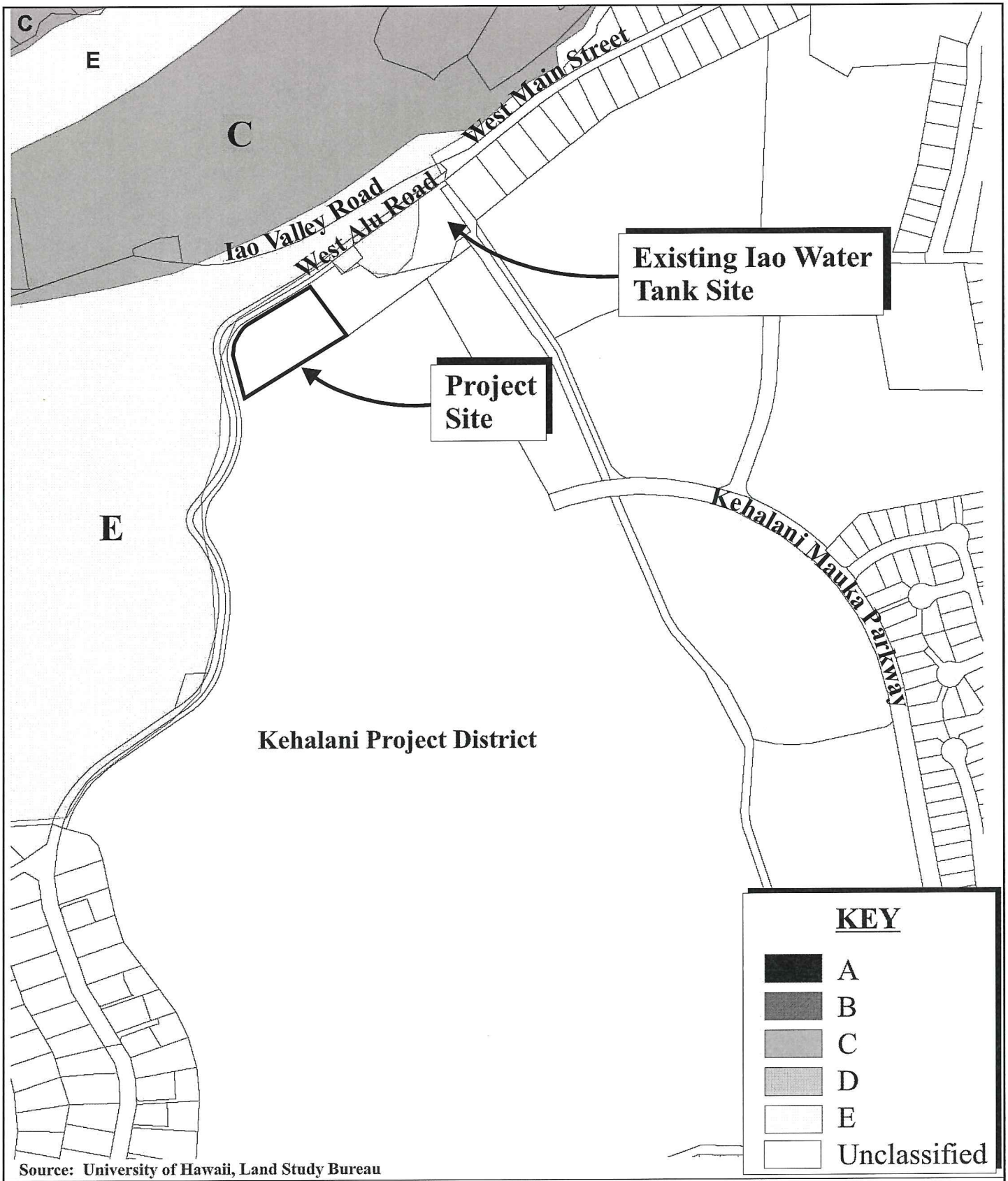
Agricultural Lands of Importance to the State of Hawaii

0 150 Feet
75 300

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\ALISH



Source: University of Hawaii, Land Study Bureau

Figure 4 Proposed Iao Water Treatment Plant Upgrades

Land Study Bureau Soil Productivity Rating

0 150 Feet
75 300

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\Soil Productivity Rating REV

The project site consists of soils within the Waiakoa-Keahua-Molokai association, which is found on low uplands and is characterized by moderately deep and deep, nearly level to moderately steep, well-drained soils that have a moderately fine textured subsoil (USDA, 1972). See **Figure 5**. Underlying the project site is Wailuku Silty Clay, 3 to 7 percent slopes (WvB) and Rough Broken Land (rRR). See **Figure 6**.

Wailuku Silty Clay, 3 to 7 percent slopes (WvB) is a dark reddish-brown silty clay that is about 12 inches thick. Permeability is moderate, runoff is slow and the erosion hazard is slight (USDA, 1972). Rough Broken Land (rRR) is very steep land broken by numerous intermittent drainage channels and contains variable soils 20 to more than 60 inches deep over soft weathered rock.

b. Potential Impacts and Mitigation Measures

Based on a foundation investigation of the proposed project site, it was determined that conventional shallow foundations may be used to support proposed structures for the WTP. The project site will be graded to allow for construction of and access to the new structures. However, adverse impacts to underlying soil conditions and topography are not anticipated to result from the proposed project. Refer to **Appendix "A"**.

5. Flood and Tsunami Hazards

a. Existing Conditions

The project site is located near the eastern base of the West Maui Mountains. As indicated by the Flood Insurance Rate Map for the County of Maui, the project site is located within Zone X. Zone X is the flood insurance rate zone that corresponds to areas of minimal flooding or areas determined to be outside the 0.2 percent annual chance flood plain. See **Figure 7**.

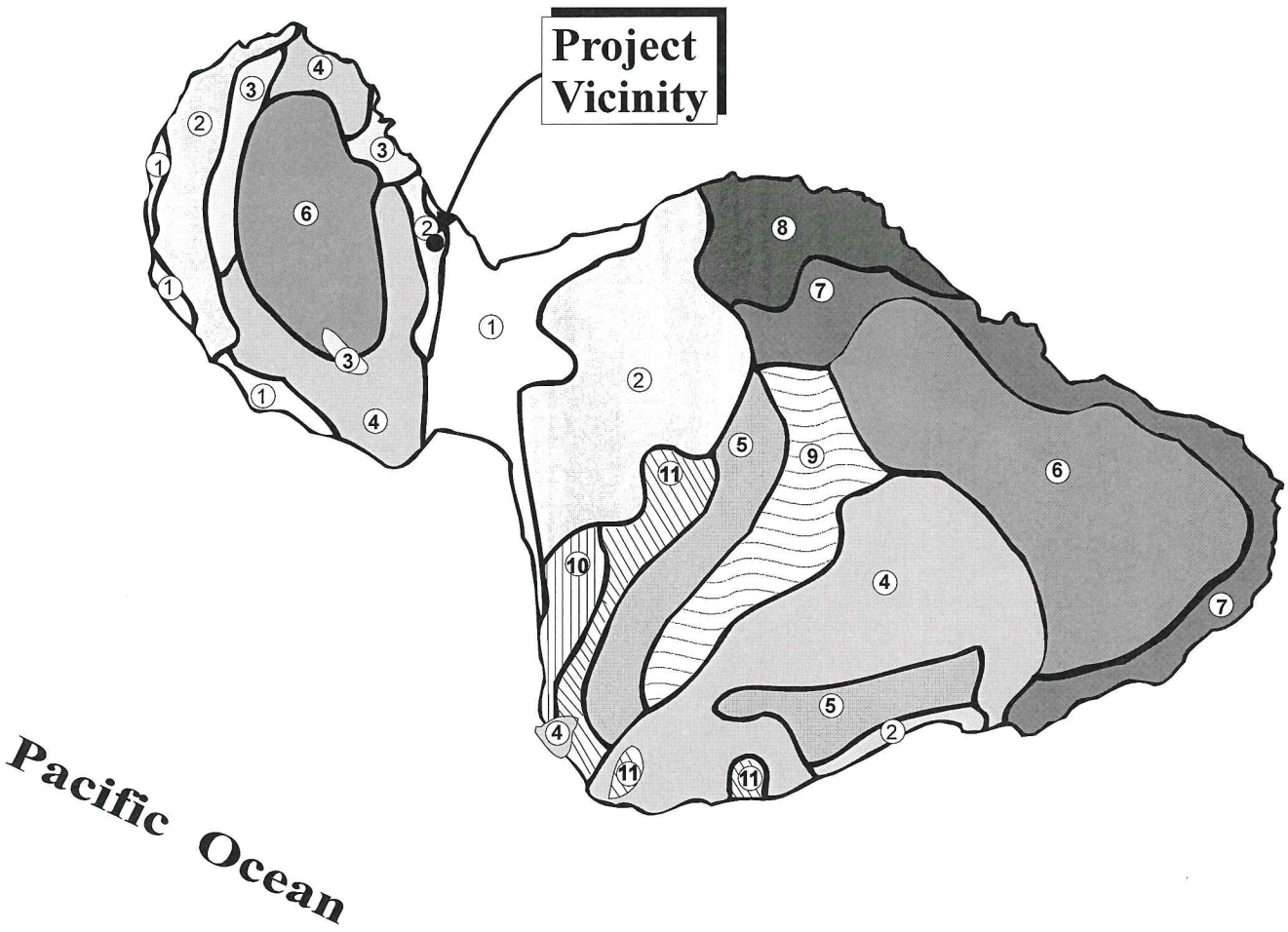
The project site is located inland and outside the tsunami inundation zone.

b. Potential Impacts and Mitigation Measures

Given the location of the project site within Flood Zone X and outside of the tsunami inundation zone, there are no anticipated adverse effects to the proposed project from flooding or tsunami related events.

LEGEND

- ① Pulehu-Ewa-Jaucas association
- ② Waiakoa-Keahua-Molokai association
- ③ Honolua-Olelo association
- ④ Rock land-Rough mountainous land association
- ⑤ Puu Pa-Kula-Pane association
- ⑥ Hydrandepts-Tropaquods association
- ⑦ Hana-Makaalae-Kailua association
- ⑧ Pauwela-Haiku association
- ⑨ Laumaia-Kaipoipoi-Olinda association
- ⑩ Keawakapu-Makena association
- ⑪ Kamaole-Oanapuka association



Map Source: USDA Soil Conservation Service

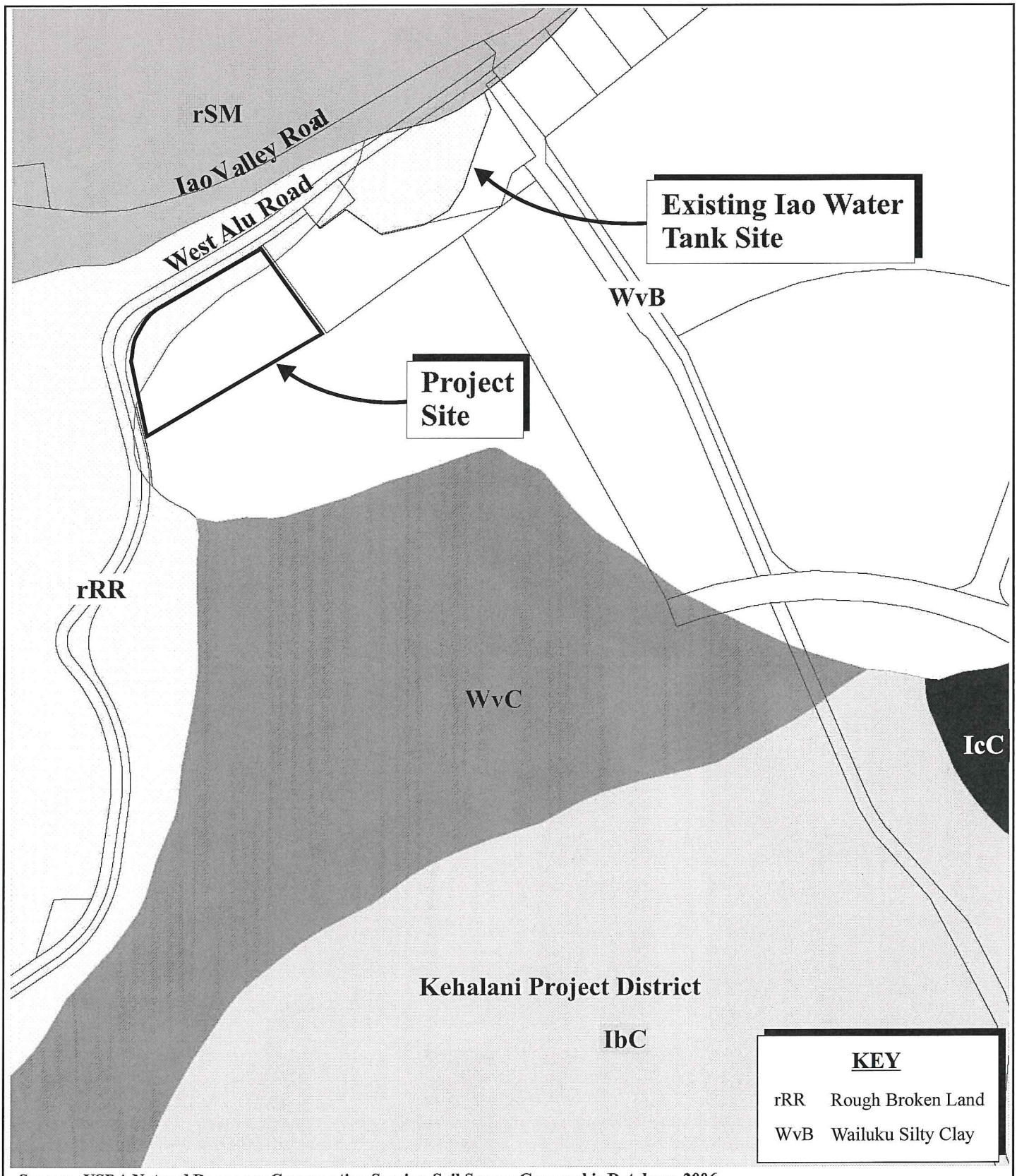
Figure 5 Proposed Iao Water Treatment Plant Upgrades
Soil Association Map

NOT TO SCALE

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\SOILS



Source: USDA Natural Resources Conservation Service, Soil Survey Geographic Database, 2006

Figure 6 Proposed Iao Water Treatment Plant Upgrades

Soil Classification Map

0 75 150 300 Feet

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\Soil Class REV

Source: Federal Emergency Management Agency, Flood Insurance Rate Map, Panel No. 1500030391E

Figure 7

Proposed Iao Water Treatment Plant Upgrades

Flood Insurance Rate Map

0 250 125 500 Feet

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\FIRM

6. Streams and Wetlands

a. Existing Conditions

There are no streams or wetlands within the project site. Iao Stream is located approximately 500 feet north of the project site. The stream is north of Iao Valley Road and generally runs west to east. This stream is listed by the State of Hawaii, Department of Health as an impaired water, indicating that the water quality within the stream may not meet State of Hawaii water quality criteria for streams. Iao Stream is one (1) of the four (4) streams in the Wailuku District that comprises Na Wai Eha. The three (3) other streams are Waihee River, Waiehu Stream, and Waikapu Stream.

On June 25, 2004, Earthjustice, on behalf of Hui O Na Wai Eha and Maui Tomorrow Foundation, Inc. (Hui/MTF), filed a Petition to Amend the Interim Instream Flow Standards (IIFS) for the Waihee River and the Waiehu, Iao, and Waikapu Streams. The State of Hawaii Commission on Water Resource Management (CWRM) held 23 days of hearings between December 3, 2007 and March 4, 2008. On June 10, 2010, CWRM released its final Findings of Fact, Conclusions of Law, Decision and Order.

On August 15, 2012, following an appeal by Petitioners Hui/MTF and the Office of Hawaiian Affairs (OHA), the Hawaii Supreme Court issued a decision vacating CWRM's Findings of Fact, Conclusions of Law, and Decision and Order issued on June 10, 2010 (the 2010 D&O) and remanded the matter to CWRM for further proceedings consistent with the court's decision.

In April 2014, the parties in the case (Hui/MTF, OHA, Hawaiian Commercial and Sugar Company, Wailuku Water Company (WWC), and the County of Maui Department of Water Supply (DWS)) reached an agreement with respect to the IIFS for the Waihee River and the Waiehu, Iao, and Waikapu Streams. The agreement was approved by CWRM on April 17, 2014.

Regarding Iao Stream and DWS specifically, CWRM reaffirmed its prior conclusion (from the 2010 D&O) that the 3.2 mgd of water for DWS's Iao Water Treatment Facility is a reasonable current and future use of water diverted from Iao Stream for purposes of the restoration of stream flows under an amended IIFS.

Further, the amended IIFS for Iao Stream is as follows:

The IIFS just below the diversion operated by WWC on Iao Stream above the Iao-Waikapu and the Iao-Maniania Ditches shall be 10 mgd; provided, however, that when the average daily flow measured at USGS stream-gauge station 16604500 on Iao Stream is between 15 mgd and 10 mgd and has continued in that range for three (3) consecutive days, the greater of one-third (1/3) of the stream flow or 3.9 mgd may be diverted for noninstream use until the flow returns to 15 mgd or above.

Further, when the average flow for any day falls below 10 mgd, commencing the next day and continuing until the average daily flow returns to at least 10 mgd, 3.4 mgd may be diverted for noninstream use.

The intent is to provide adequate water to accommodate DWS's 3.2 mgd for its water treatment plant and the estimated 0.2 mgd used by kuleana users served exclusively by the Iao-Waikapu Ditch.

However, this decision nonetheless is without prejudice to the rights of any party and of CWRM to revisit this issue in the context of any proceeding involving a water use permit application by DWS, in which proceeding DWS will have the burden of justifying its water use.

On March 31, 2009, DWS submitted Surface Water Use Permit Applications (SWUPAs) to CWRM: SWUPA-E for its existing use of 1.784 mgd and SWUPA-N for a new use of 1.416 mgd from the Iao-Waikapu Ditch, for a total of 3.2 mgd. However, the water use permit application proceedings have yet to begin. CWRM has continued the hearings on all existing use SWUPAs and has not yet taken up the matters of the new use SWUPAs.

Hawaii Revised Statutes (HRS) Section 174C-49 sets forth the criteria that must be met for water use permits. Under HRS Section 174C-49, an applicant for a water use permit must establish that the proposed use of water (1) can be accommodated with the available water source, (2) is a reasonable-beneficial use as defined in HRS Section 174C-3, (3) will not interfere with any existing legal use of water, (4) is consistent with the public interest, (5) is consistent with state and county general plans and land use designations, (6) is consistent with county land use plans and policies, and (7) will not interfere with the rights of the Department of Hawaiian

Home Lands. Each of DWS's SWUPAs demonstrate that the proposed use of water can meet each of these criteria as described in the following:

(1) Per agreements with Wailuku Water Company LLC (WWC) dated June 9, 2004, first amendment November 29, 2007, and second amendment February 27, 2008, DWS is entitled to withdraw up to 3.2 mgd except as notified by WWC when Iao Stream flow is below flow rates previously described.

(2) Current withdrawals from Iao ditch are mixed with Iao and Waihee aquifer source to serve the Central Maui system (21,450 meters). Domestic uses account for two-thirds of the Central Maui system. The remaining one-third serves commercial, industrial, and agricultural uses with a portion of these uses served by non-potable uses and supplemented by reclaimed and brackish irrigation water. Domestic uses under the public trust doctrine are entitled to a high priority. And CWRM concluded back in February 27, 2006 and January 31, 2007 that DWS's basal source withdrawals serve the public interest.

(3) As explained previously, in April 2014, the parties in the Hui O Na Wai Eha case reached an agreement with respect to the IIFS for the Waihee River and the Waiehu, Iao, and Waikapu Streams and the agreement was approved by CWRM on April 17, 2014.

(4) Based on explanations provided above on how criterias 1, 2, and 3 are proposed to be met, the water use is consistent with the public interest.

(5) The discussions provided in Chapter III explain how the proposed project is consistent with the state and county general plans, and land use designations.

(6) The discussions provided in Chapter III explain how the proposed project is consistent with county land use plans and policies.

(7) DWS places a high priority on Department of Hawaiian Home Lands (DHHL) residential projects and although DWS ceased to issue reservations in the Central Maui system post-designation of Iao aquifer, exemptions were made for DHHL so that water could be secured for planned expansion of Hawaiian Home Lands residential projects.

The closest wetland is the Kanaha Pond Wildlife Sanctuary located approximately 3.5 miles northwest of the project site.

Waihee Ditch, an irrigation canal built in the early 1900s, is located approximately 600 feet east of the project site. The irrigation canal flows in a southeast direction to Waiale reservoir via the Hopoi chute and to irrigated agricultural fields.

b. Potential Impacts and Mitigation Measures

The source water for the Iao WTP is the watershed area draining into the upper reaches of Iao Stream. There is a ditch intake in Iao Stream, near Iao Valley State Park, that diverts stream water into Iao Ditch. Shortly downstream of the Iao Ditch intake, the ditch divides into two (2) ditches. The Iao-Maniania Ditch flows north towards Waiehu, and the Iao-Waikapu Ditch flows south towards Maalaea. Where the Iao-Waikapu Ditch crosses Alu Road, an intake diverts water from the ditch into the raw water transmission line that conveys the water to the existing Iao WTP. Refer to **Appendix "A"**.

According to the agreement approved by CWRM, the proposed 3.2 mgd water for the Iao WTP is a reasonable amount and future use of water from Iao Stream for purposes of the restoration of stream flows under an amended IIFS. Based on the provisions of the agreement for the IIFS, there are no anticipated impacts to the Iao Stream. Continued regulated use of the surface water diverted from Iao Stream will insure this resource will not be depleted in the future.

Under existing conditions, stormwater runoff sheetflows east of the project site. Runoff normally infiltrates into the open field lands, but in intense storm events, runoff may reach and enter the Waihee Ditch, which is approximately 600 feet from the project site. The proposed project involves the development of a storm drain system which will reduce the runoff flowing into the Waihee Ditch. More detailed discussion on the drainage system is provided later in this chapter.

The proposed project also involves the construction of a dual-compartment concrete sludge lagoon for gravity solids-liquid separation of backwash water from the filtration membrane units. The decanted treated water will be conveyed by a 12-inch drainline from the sludge lagoon to a discharge point into Waihee Ditch. An NPDES permit will be required for this discharge.

The water quality of discharges into the Waihee Ditch will meet levels acceptable to State of Hawaii Department of Health – Clean Water Branch (CWB) under their permitting requirements and comply with the State's Water Quality Standards.

7. Flora and Fauna

a. Existing Conditions

The project site lies on former agricultural lands that slope gently down to the east from the West Maui Mountains. Original vegetation in the area consisted of a dense low saturated native forest and shrubland. However, the area was cleared for sugar cane cultivation in the mid 1800s and the land was plowed, planted, burned, and harvested in continuous cycles for over 100 years. When sugar production ended in the 1990s, the area was converted to cattle grazing. These agricultural practices, along with recent fires, have resulted in an environment that is nearly lacking native plants and animal species.

A Biological Resources Survey was conducted for the project site by Robert Hobdy in August 2013. See **Appendix "D"**. The vegetation throughout the project area is dominated by non-native species that are of no particular environmental interest or concern. Just one (1) common indigenous plant, uhaloa, was found growing in a recently disturbed area. No federally listed Endangered or Threatened plant species (USFWS, 2013) were found, nor do any plants that are candidates for such status occur on the project area. No special plant habitats occur on or near the project and no potential wetlands occur in this dry upland site.

Just one (1) non-native mammal, the mongoose (*Herpestes auropunctatus*), was observed during two (2) site visits to the project area. Deep dense grass made it difficult to see small terrestrial mammals but one would expect there to also be mice (*Mus domesticus*), rats (*Rattus spp.*), and perhaps feral cats (*Felis catus*) in the project area. A special effort was made to look for the native Hawaiian hoary bat by making an evening survey of the area. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though visibility was excellent. Birdlife was rather sparse in and around the project area due to the lack of habitat diversity and food resources. Just six (6) species of non-native birds were recorded during two (2) site visits.

In summary, the wildlife within and around this project area is composed almost entirely of non-native species. Of a total of one (1) mammal, six (6) birds, one (1) reptile, eight (8) insects, only one (1) indigenous dragonfly,

the green darner (*Anax junius*) was recorded. This dragonfly, which is widespread in Hawaii, also occurs on the American mainland. No endangered or threatened native animals were found during the survey, nor were any found that are candidates for such status. No special wildlife habitats were found.

b. Potential Impacts and Mitigation Measures

There are no endangered or threatened species of flora or fauna found within the project site. The Biological Resources Study concluded that the proposed project is not expected to have any significant negative impacts on the botanical resources in this part of Maui. No recommendations regarding botanical resources are deemed necessary or appropriate. The development of this proposed project is not expected to have a significant negative impact on the native wildlife resources in this part of the island.

While no protected seabirds were found on the property, the uau or dark rumped petrel (Pterodroma sandwichensis) and ao or Newell's shearwater (Puffinus newelli) are known to overfly the area at dawn and dusk to their burrows high in the mountains between the months of March and November. In late fall, young birds fledge from their burrows to take their first tentative flights out to sea. These inexperienced birds are easily confused and distracted by bright lights and often crash to the ground where they are particularly vulnerable to being run over by vehicles or killed by predators. It is recommended that any significant outdoor lighting such as street lights or flood lights that are incorporated into the project design be shielded to direct the light downward so that it is not visible from above. Refer to **Appendix "D"**.

Comments received by correspondence on March 16, 2015 from the U.S. Fish and Wildlife Service (USFWS) during the 30-day comment period expressed concerns that the proposed perimeter security chainlink fence with barbed wire may pose a risk of entanglement of Hawaiian hoary bats. However, the proposed Iao Water Treatment Plant will need to provide safe drinking water to nearby communities, and as such, must have appropriate provisions for security. The DWS will coordinate with USFWS, as applicable.

8. Archaeological Resources

a. Existing Conditions

An Archaeological Assessment of the project area was completed by Scientific Consultant Services, Inc. (SCS) on October 2013 and revised in July 2015 pursuant to comments by the State Historic Preservation Division (SHPD). See **Appendix "E"**. The assessment involved conducting an Archaeological Inventory Survey comprised of historic background research and a pedestrian survey. The assessment was done to determine the presence or absence of architecture, midden deposits, and/or artifact deposits on the surface of the project area, and assess the potential for presence of subsurface cultural deposits.

As previously mentioned, the project site is part of a larger agricultural parcel that was previously used for sugar cane cultivation and land for pasture. The parcel has clearly experienced land alteration by earthmoving activities associated with construction of the adjacent water tank facility and previous agricultural and road building activities.

Fieldwork investigation conducted on August 30, 2013 by SCS revealed no surface materials and areas thought to potentially contain subsurface cultural materials. Also, no new sites, surface features or midden scatters were identified during the pedestrian survey. The ground surface and subterranean reaches of the parcel have been heavily modified through time by intensive industrial sugar cane plantation cultivation.

b. Potential Impacts and Mitigation Measures

The Archaeological Assessment's 100 percent pedestrian survey of the project area did not lead to the identification of any surface cultural remains. Historic and modern era agricultural and water storage construction activities have likely disturbed any previously existing sites or surface deposits. The Archaeological Assessment report concluded that the proposed project will not have an adverse impact on any archaeological sites or features. Refer to **Appendix "E"**.

State Historic Preservation Division (SHPD) provided a comment letter dated June 17, 2015, recommending an Archaeological Inventory Survey with subsurface testing be conducted in addition to the Archaeological Assessment Survey done back in October 2013. SHPD conducted a site

visit on July 6, 2015, and upon further review, determined that no subsurface testing was required. The revised Archaeological Assessment was filed with SHPD for review and approval in July 2015.

9. Cultural Resources

a. Existing Conditions

Within the Hawaiian cultural context, the project site is located within Wailuku ahupuaa, which translated means "water [of] destruction," referring to the battle of Ke Pani Wai, between Kamehameha I and Kalanikupule.

The Wailuku area is known for the occupancy of chiefly individuals, with many chiefs and much of the area's population residing near or within portions of Iao Valley and lower Wailuku. The Wailuku District and Wailuku ahupuaa are frequently mentioned in historical texts and oral-tradition accounts as being politically, ceremonially, and geographically important areas during traditional times. The area was likely settled between c. A.D. 1100 and A.D. 1200. Scattered amongst the agricultural and habitation sites were other places of cultural significance. The Wailuku District was a center of political power often at war with its rival in Hana.

During the Great Mahele of 1848, the Wailuku District was declared Crown Land. Approximately 180 Land Commission Awards (LCA) were granted in Wailuku ahupuaa and 100 were granted in the neighboring Waikapu ahupuaa. While a handful of foreigners gained control of large parcels of land that would later be used for commercial sugar cane production, the majority of LCAs were awarded to Native Hawaiians, suggesting that the area was densely populated in the mid-19th century. The project site falls under LCA 387, which was awarded to the American Board of Commissioners for Foreign Missions.

Land use in and around the project area in the mid-19th and early 20th centuries was largely devoted to commercial sugar cane and pineapple production. Sugar plantations and mills have been located in the Wailuku and Waikapu area since the 1860s. The Hopoi Sugar Camp, which shows up on maps dated to 1922, was located just south of the project area near the Hopoi Reservoir. Refer to **Appendix "E"**.

A Cultural Impact Assessment interview was conducted on October 19, 2013 with Mr. Carl Izumi who lived in the house located directly below the existing Iao Water Tank site. Prior to moving into the house below the water tank, their family lived a couple miles away at a different location in Wailuku town on Vineyard Street. During the times he lived next to the water tank and through the years his family owned the house after him leaving the island over 40 years ago, he does not recall any cultural practices taking place in the vicinity of the Iao Water Tank. See **Appendix "F"**.

Another Cultural Impact Assessment interview was conducted on November 19, 2014 with Mrs. Tomiko "Helen" Yamagata at her residence on Vineyard Street which is about 0.57 miles from the project site. Mrs. Yamagata lived at this location in Wailuku for the past 68 years after being married. Prior to living on Vineyard Street, she lived on Kahookele Street in Wailuku and worked as a seamstress at the Wailuku Hotel next to Kress Store off of Market Street. She later was a self-employed seamstress working from her home while raising her children. She babysat for one (1) of her daughters that lived in Wailuku Heights so she and her husband frequently drove by the project site to and from their residence. She was also an avid runner and later walker that covered many routes and long distances in the Wailuku area daily. Her recollection of the area was that it was all in cane field cultivation and throughout the decades, she has not observed any cultural or gathering practices on the project site and surrounding area. Refer to **Appendix "F"**.

Although the slopes of the West Maui Mountains and the nearby Iao Valley are both culturally significant areas to Native Hawaiians, the land underlying the proposed WTP itself does not appear to host any cultural practices.

b. <u>Potential Impacts and Mitigation Measures</u>

From a recent historical perspective, land underlying the proposed project site was primarily used for commercial sugar cane cultivation and pastureland. Also, the Cultural Impact Assessment interviews revealed no indications of cultural practices, such as gathering, access, or religious traditions, known to be associated with the existing tank and adjacent project site.

With reference to the project site, no adverse impact to cultural resources, practices, and traditions anticipated.

10. Air Quality

a. Existing Conditions

The project site, in general, does not experience adverse air quality conditions. There are no point sources of airborne emissions within close proximity to the project site. Point sources in the surrounding Central Maui region include the Maalaea Power Plant, Puunene Sugar Mill, and rock quarry at Puunene, all of which are well over two (2) miles from the project site. Non-point sources of pollution in the vicinity of the project site include: vehicular exhaust from High Street, Honoapiilani Highway and other nearby roadways; dust generated by construction activities in the Kehalani Mauka development; and/or burning activities from sugar cane harvesting and cultivation operations conducted in the central valley area. Emissions from these sources, however, are quickly dispersed by prevailing tradewinds.

b. Potential Impacts and Mitigation Measures

During construction, airborne particulates as a result of construction-related activities may temporarily affect the ambient air quality within the immediate vicinity of the project site. The project will comply with regulations established in Hawaii Administrative Rules (HAR), Chapter 11.60.1, "Air Pollution Control" and Section 11-60.1-33, "Fugitive Dust". Mitigative measures will include utilization of water wagons and sprinklers to control dust, as well as other appropriate Best Management Practices to ensure that fugitive dust from the project area is minimized. By effectively employing these mitigative measures, construction-related activities are not anticipated to pose a significant impact to the air quality in the surrounding area.

From a long-term perspective, adverse impacts to air quality are not anticipated.

11. Noise

a. Existing Conditions

The predominant source of noise in the vicinity of the project site stems from traffic traveling along Iao Valley Road, South Alu Road, West Alu Road, and other roadways in the area. The lands abutting the site are former agricultural lands that are currently vacant and undeveloped. Single-family homes located to the south, west, and east of the project site are not major noise-generators.

b. Potential Impacts and Mitigation Measures

Ambient noise conditions may be temporarily affected by construction-related activities. Heavy construction machinery and equipment are anticipated to be the dominant noise-generating sources during the construction period. Mitigation measures for construction-related activities will include using proper equipment and conducting regular vehicle maintenance, both of which are anticipated to reduce noise levels. Equipment mufflers or other noise attenuating equipment may also be employed as required. Noisy construction activities will be restricted to hours between 7:00 a.m. and 3:30 p.m., Monday through Friday, excluding holidays. The project will comply with HAR, Chapter 11-46, "Community Noise Control" and obtain a noise permit, as applicable. By effectively employing these measures, potential noise-related impacts from construction-related activities will be mitigated to an acceptable level. Ambient noise impacts associated with the project will be limited to a 24-month time frame during which the construction of the project will be completed.

Upon completion of the project, equipment such as compressors, blowers, and the standby generator within the TPB will generate noise. These equipment items will be housed within sound attenuated rooms inside the TPB such that applicable State of Hawaii Department of Health day-time and nighttime noise limits at the property lines are met for the compressor and blower. Refer to **Appendix "A"**.

From a long-term perspective, the proposed Iao WTP is not anticipated to result in adverse noise impacts.

12. Scenic and Open Space Resources

a. Existing Conditions

Scenic resources in the vicinity of the project site include the West Maui Mountains to the West and the Central Maui's isthmus and Haleakala to the east. Open space resources in the region include the slopes of the West Maui Mountains. Background views beyond the existing site from ground level are limited due to the terrain and natural vegetation and trees that surround the area. Scenic and open space views looking makai are best seen when travelling downhill along West Alu Road from the Old Wailuku Heights area. Ground views looking mauka up towards the West Maui Mountains are obscured by the terrain and dense tree forest.

b. Potential Impacts and Mitigation Measures

The proposed project involves constructing a Treatment Plant Building (TPB) and related facilities mauka of the existing Iao water tank. West Alu Road, that perimeters the north and west boundaries of the site, rises from an elevation of 527.2 feet up to 557.85 feet. Contour elevations of the site gently rise up to meet with the road elevations. The higher side of the site will be excavated down to create a level pad for the TPB and Chlorine Contact Tank (CCT) and appurtenant facilities. The maximum heights from the finished grade to the top of the TPB and CCT are about 29 feet and 15 feet, respectively. Views down to the slopes of Haleakala and Central Maui's isthmus will still be visible from West Alu Road's upper elevation approach. Additionally, DWS will install landscaping on the southern boundary of the project site to provide visual mitigation for the facility. Refer to **Appendix "B"**, Preliminary Development Plans, Sheet L-4. As such, the proposed project will not negatively affect scenic resources. Furthermore, the TPB and CCT footprints will occupy only 9,800 square feet and 2,180 square feet, respectively. Therefore, the project is not anticipated to adversely affect open space resources.

13. Beach and Mountain Access

a. Existing Conditions

The project site is located approximately 2.5 miles from the nearest beach and approximately a quarter of a mile from the foot of the West Maui Mountains. Further, cultural interviews conducted for the proposed project

concluded that there are no activities related to gathering, access, or other customary activities occurring at the project site.

There is a recreational hiking trail that originates up into the mountains from the sharp turn where West Alu Road turns into South Alu Road. Trail users currently park along the roadside shoulder fronting the vacant parcel above the existing MECO substation where the proposed project access driveway will be located (TMK (2)3-5-001:091, also referred to as Lot T-1).

b. Potential Impacts and Mitigation Measures

There are no traditional access corridors identified by the Cultural Assessment within the project site and due to the distances to the nearest beach and mountain, there are no anticipated adverse impacts to culturally related beach and mountain access from the proposed project.

As for the recreational hiking trail users, their access to the trail and roadside shoulder parking will not be obstructed by the proposed project. The project's perimeter fencing placement will leave adequate space within the West Alu Road right-of-way between the edge of pavement and fence to accommodate trail user vehicle parking.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

a. Existing Conditions

The population of the County of Maui has exhibited relatively strong growth over the past decade. In 2010, there were 154,834 residents in the County, a 21 percent increase in the resident population since 2000. The Wailuku-Kahului region is the most populous region in the County and has grown at a faster rate than the County as a whole. In 2010, there were approximately 54,400 residents living in the Wailuku-Kahului region, a 31 percent increase over the last decade (U.S. Census Bureau, 2000 and 2010). Population in the County of Maui is projected to grow to 199,550 residents by 2030 while the Wailuku-Kahului region is anticipated to have approximately 71,200 residents (County of Maui, Department of Planning, 2006).

b. Potential Impacts and Mitigation Measures

The proposed project involves the replacement of the existing Iao WTP and is not considered a population generator. As such, significant impacts to population are not anticipated to result from project implementation.

2. Economy

a. Existing Conditions

The Wailuku region is Maui County's center of governmental activity. Along with neighboring Kahului, the region encompasses a broad range of commercial, service, and public sector activities. In addition, the region is surrounded by approximately 32,000 acres of sugar cane. This vast expanse of agricultural land, managed by Hawaiian Commercial & Sugar Company (HC&S), is a key contributor to the local economy.

Not-seasonally-adjusted unemployment rates for both Maui County and the Island of Maui in May 2015, were 3.9 percent and 3.8 percent, respectively. These rates both decreased from May 2014 when unemployment rates stood at 4.5 percent and 4.4 percent, respectively (DLIR, May 2015).

b. Potential Impacts and Mitigation Measures

In the short term, the proposed project will provide construction-related revenue and employment. Accordingly, the project will have a beneficial impact on the local economy during the construction phase.

In the long term, the facility is not anticipated to significantly impact Maui County's economy. DWS anticipates two (2) to three (3) employees at the Iao WTP during the week once completed. No new positions are expected to be required to staff the replacement facility.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

Police protection for the Wailuku and Waikapu region is provided by the Maui County Police Department headquartered on Mahalani Street, approximately 1.5 miles north of the project site. The region is served by

the Department's Central Maui station, which is divided in three (3) sectors. Each sector is divided into three (3) beats, each patrolled by a single officer.

Fire prevention, suppression, and protection services for the Waiehu, Waihee, and Wailuku regions are provided by the County Department of Fire and Public Safety's Wailuku station, located on Kinipopo Street in Wailuku Town, approximately 0.9 mile northeast of the project site. The region is also served by the Department's Kahului Station, located on Dairy Road, approximately 3.7 miles east of the project site.

b. Potential Impacts and Mitigation Measures

The proposed project will not affect the service area limits or personnel for police and fire protection. The proposed facility is not anticipated to impact calls for service for police and fire personnel.

2. Medical Services

a. Existing Conditions

The island's major medical facility is Maui Memorial Medical Center, located approximately 3.0 miles north of the project site, midway between Wailuku and Kahului. Acute, general, and emergency care services are provided at the 231-bed facility. Other private medical service providers in the Central Maui region, which have regular hours, include Maui Medical Group and Kaiser Permanente.

b. Potential Impacts and Mitigation Measures

As a non-habitable project, the proposed facility will not affect requirements for medical services. As with police and fire protection services, service area limits for medical emergency responders will not be affected by the proposed project.

3. Solid Waste

a. Existing Conditions

Single-family residential solid waste collection service is provided by the County of Maui. Residential solid waste collected by County crews is disposed at the County's Central Maui Landfill, located four (4) miles southeast of the Kahului Airport. Commercial waste from private collection

companies is also disposed at the Central Maui Landfill. A County-operated green waste recycling facility is located at the Central Maui Landfill.

Maui Demolition and Construction Landfill, a privately owned facility, accepts solid waste and concrete from demolition and construction activities. This facility is located at Maalaea, south of the project site, near Honoapiilani Highway's junction with North Kihei Road and Kuihelani Highway.

b. Potential Impacts and Mitigation Measures

Construction waste which may be generated from implementation of the project will be recycled or disposed of at the appropriate construction waste disposal location. With these solid waste management measures, the contribution of construction waste to the landfills will be minimized. Thus, the proposed action is not anticipated to adversely affect capacity parameters of the County's solid waste system.

4. Recreational Resoures

a. Existing Conditions

The County's Wailuku Elementary School Park is located less than a quarter of a mile from the site, providing baseball/softball fields, basketball courts, a volleyball court, and a playground.

b. Potential Impacts and Mitigation Measures

As the proposed project is not considered to be a population generator, it will not create a need for additional recreational facilities. Therefore, the proposed project is not anticipated to adversely impact existing public recreational facilities.

5. Schools

a. Existing Conditions

The Wailuku-Kahului region is served by the State Department of Education's (DOE) public school system and by several privately operated schools. Public schools operated by DOE in the Kahului area include Lihikai, Kahului, and Pomaikai Elementary Schools (Grades K-5); Maui

Waena Intermediate School (Grades 6-8); and Maui High School (Grades 9-12). Existing DOE public schools in the Wailuku area include Wailuku Elementary School (Grades K-5); Iao Intermediate School (Grades 6-8); and Baldwin High School (Grades 9-12). The University of Hawaii-Maui College, located north of the project site in Kahului, serves as the island's primary higher education institution. A new public elementary school, the Puu Kukui Elementary School (Grades K-5), recently opened within the Kehalani Mauka development.

b. Potential Impacts and Mitigation Measures

The proposed facility is a non-residential project and is not anticipated to impact school enrollments or facility requirements.

D. INFRASTRUCTURE

1. Roadways

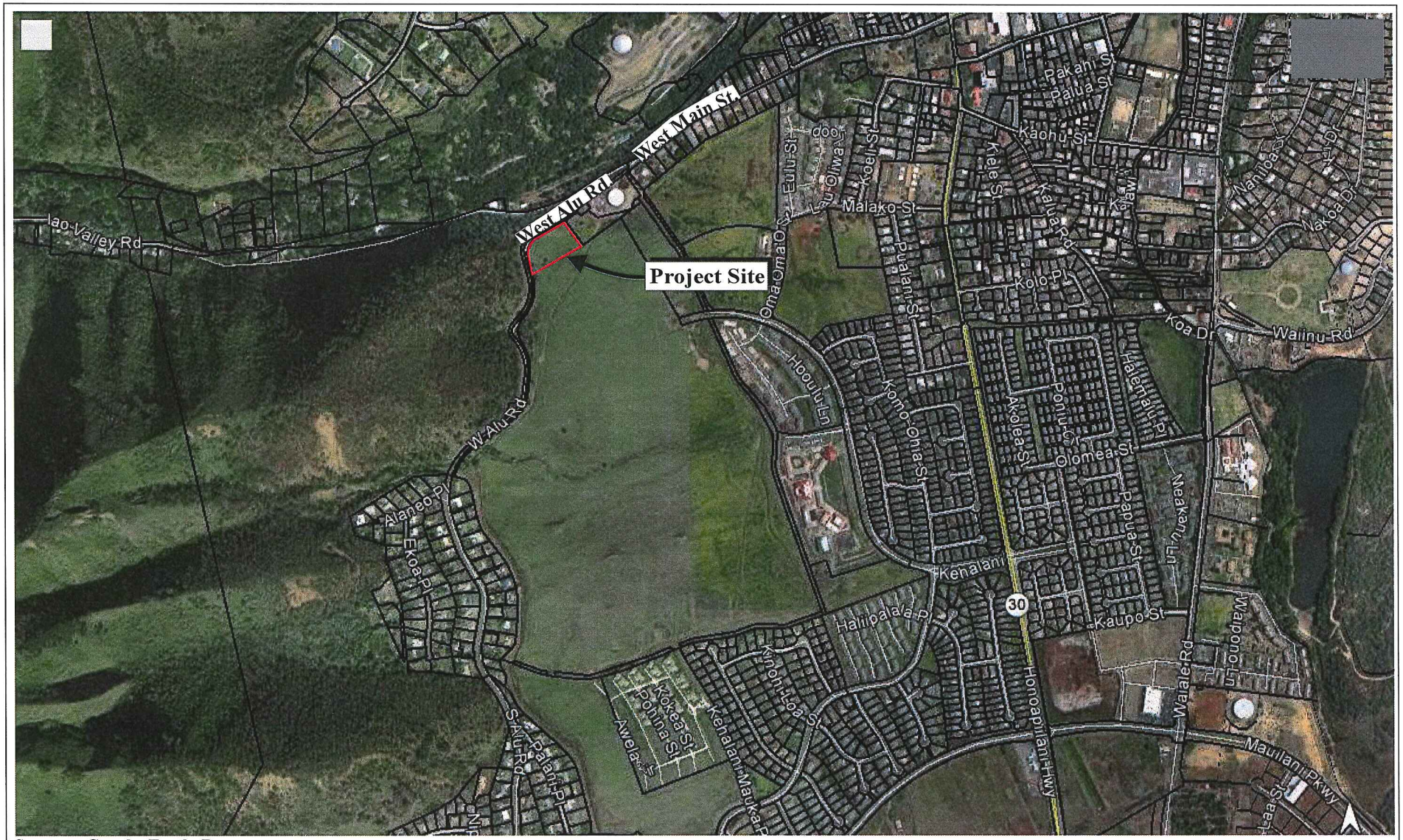
a. Existing Conditions

The proposed Iao WTP site will be located on an undeveloped parcel adjacent to West Alu Road. Currently, there is no vehicular access to the proposed project site.

West Alu Road is a two-lane roadway that originates at the junction with Iao Valley Road and West Main Street. West Alu Road provides access through the Wailuku Heights residential neighborhood while Iao Valley Road continues west into Iao Valley. West Main Street is a two-lane east-west roadway that runs through Wailuku Town. See **Figure 8**.

b. Potential Impacts and Mitigation Measures

Access to the project site will be by a new driveway off of West Alu Road. No roadway improvements are included in the WTP design other than the proposed driveway entrance. There will be a short-term increase in traffic during construction of the new Iao WTP associated with construction workers and equipment entering and leaving the project site. A maximum of 20 to 25 construction employees are expected to work at the project site. Parking for construction employees will be located on the project site to



Source: Google Earth Pro

Figure 8 Proposed Iao Water Treatment Plant Upgrades

Regional Roadway Map

NOT TO SCALE

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\RegionalRoadwayMap

minimize additional traffic impacts. Limited construction access use will be confined to the two (2) year construction period. Construction of the proposed project is not anticipated to significantly impact pedestrian or vehicular movement and minimal road or lane closures are expected during the course of the project.

Once the facility is in operation, there will be two (2) to three (3) DWS employees working at the WTP, seven days a week. Based on this anticipated level of maintenance and monitoring, significant long-term impacts to traffic conditions in the vicinity of the WTP site are not anticipated.

2. Water

a. Existing Conditions

The source raw water for the Iao WTP for treatment is the watershed area draining into the upper reaches of Iao Stream. There is a ditch intake in Iao Stream, near lao Valley State Park, that diverts stream water into Iao Ditch. Shortly downstream of the Iao Ditch intake, the ditch divides into two (2) ditches. The Iao-Maniania Ditch flows north towards Waiehu, and the Iao-Waikapu Ditch flows south towards Maalaea. Where the Iao-Waikapu Ditch crosses Alu Road, an intake diverts water from the ditch into the raw water transmission line that conveys the water to the Iao WTP. Refer to **Appendix "A"**.

As previously noted, the amount of water allowed for use at the Iao Water Treatment Plant was arrived at in a recent agreement accepted by all parties (Hui o Na Wai Eha, Maui Tomorrow Foundation, the Office of Hawaiian Affairs, Hawaiian Commercial and Sugar Company, Wailuku Water Company, the County of Maui Department of Water Supply, and the State of Hawaii Commission on Water Resource Management). Impacts to streams were taken into consideration during discussions on the agreement. With anticipated growth in the Central Maui system that encompasses customers from Hookipa to Makena, and the fact that the Iao aquifer is nearing its sustainable yield, surface water is needed to provide water for future growth.

b. Potential Impacts and Mitigation Measures

The proposed project involves replacing the existing Iao WTP, which has a capacity to produce approximately 1.7 mgd of treated water, with a new WTP. The new WTP is designed to produce an average of up to 3.2 mgd of treated water.

As previously noted, CWRM concluded that the water diverted from Iao Stream for the Iao WTP is a reasonable current and future use for purposes of the restoration of stream flows under an amended IIFS. Further, the IIFS agreement between the parties noted the 3.2 mgd for the DWS' Iao WTP. It is noted that DWS submitted Surface Water Use Permit Applications (SWUPAs) to CWRM: SWUPA-E for its existing use of 1.784 mgd and SWUPA-N for a new use of 1.416 mgd from the Iao-Waikapu Ditch, for a total of 3.2 mgd. However, the water use permit application proceedings are pending as CWRM has continued the hearings on all existing use SWUPAs and has not yet taken up the matters of the new use SWUPAs.

Regulated use of the allocation of surface water from Iao Stream will ensure flows are not reduced to the point of adversely impacting biological resources that depend on the stream. Use of surface water will reduce the demand on the groundwater aquifer to further preserve this natural resource.

To further mitigate impacts to water resources, the County DWS has water conservation programs to educate the public on xeriscape landscaping, gardening techniques, and offers free low flow fixtures for residential use.

3. Wastewater

a. Existing Conditions

The site is presently vacant and undeveloped with no wastewater being generated. There is an existing off-site 8-inch sewer gravity line and manhole along West Alu Road approximately 700 feet downhill of the site. The existing 8-inch sewerline is part of the Central Maui Wastewater Collection System which conveys wastewater for treatment to the Kahului Wastewater Reclamation Facility.

b. Potential Impacts and Mitigation Measures

Wastewater generated from the Restroom and Break Room in the TPB will be conveyed to an on-site 6-inch gravity line with cleanouts. The 6-inch gravity line will transition into an off-site 8-inch gravity line with manholes within West Alu Road. The 8-inch gravity line will then convey the wastewater to a discharge point into an existing sewer manhole along West Alu Road approximately 700 feet downhill of the project site. Refer to **Appendix "A"**.

The wastewater flow from the TPB is estimated to be 60 gallons per day, which is minimal. Therefore, wastewater generated from the TPB is not anticipated to negatively impact the existing sewer collection and treatment plant facilities in the central region.

4. Drainage

a. Existing Conditions

The project site is currently undeveloped and covered with dense high grass. The land slopes from west to east averaging approximately nine (9) percent. Elevations range from 508 to 560 feet msl. West Alu Road is situated slightly higher and borders the site's north and west boundaries.

Annual rainfall is around 37 inches, making the climate semi-arid. Rainfall is also highly seasonal with 90 percent of the annual rainfall occurring between October and May. The 10- and 50-year, 1-hour rainfall is 2.5 and 3.6 inches, respectively. Refer to **Appendix "C"**.

Site runoff drains over land as sheet flow to the east through vacant open land. There are no drainageways or areas of concentrated flow. Runoff normally infiltrates into the open field lands but in intense storm events, runoff may reach and enter Waihee Ditch which is located approximately 600 feet makai of the site. Waihee Ditch flows to Waiale Reservoir via the Hopoi Chute and to irrigated agricultural fields. Refer to **Appendix "C"**.

Existing storm water runoff from the project site under the 10-year storm is 4.15 cubic feet per second (cfs). Mountainous offsite land above West Alu Road contributes an additional 33.15 cfs of runoff. The total runoff flowing through the project site to Waihee Ditch is 37.30 cfs.

The project site is not within any Federal Emergency Management Agency (FEMA) flood zone area. The area lies within Zone X, which are areas determined to be outside the 0.2 percent annual chance (500-year) floodplain. Refer to **Figure 7**.

b. Potential Impacts and Mitigation Measures

Proposed site grading will feature excavation on the mauka end and embankment of the makai end to create a relatively level pad area. Embankment slopes will be limited to two (2) feet horizontal to one (1) foot vertical with no retaining walls. Maximum cut will be about 16 feet and the maximum embankment will be 8 feet.

The proposed project is within the Kehalani Mauka Development (KMD) which has an approved drainage master plan by Warren S. Unemori Engineering titled "Drainage Report, Kehalani Offsite Drainage System – Phase 1, Wailuku, Maui, Hawaii, Revised January 2004". The report designed the current back-bone drainage system that collects and conveys KMD runoff to a downstream stormwater management system which includes the 490 acre-foot Waikapu Retention Basin located adjacent to Waiale Road.

The runoff from the proposed project site and its offsite contributing area will be collected and conveyed to the Waikapu Retention Basin. The proposed storm drainage system will consist of a 36-inch inlet headwall to collect offsite runoff entering the site from offsite mountainous areas from the west through the existing 36-inch West Alu Road culvert. Eight (8) grated drain inlets will collect runoff from the project site and other offsite areas. This runoff will be conveyed via adequately sized storm sewer pipes, approximately 1,500 feet to Kehalani Parkway to connect into a 54-inch storm drain pipe located within Kehalani Mauka Parkway and directed to the Waikapu Retention Basin. Management of peak runoff is provided by the Waikapu Retention Basin, which is designed to fully retain the 100-year, 24-hour runoff from full build out of all phase of the Kehalani Mauka Development plus its mauka offsite contributing areas.

The proposed improvements for this project will be designed in accordance with the Department of Public Works (DPW) Storm Drainage Rules and will conform to the drainage design set forth in the approved KMD Drainage Master Plan. With implementation of the proposed storm drain

system, the runoff flowing into Waihee Ditch will decrease from 37.30 cfs under existing conditions to 1.21 cfs, a decrease of 36 cfs. Runoff that will be conveyed to the Waikapu Retention Basin will total 43.12 cfs. The runoff from this project will be completely retained in the basin resulting in zero discharge into any downstream drainage system.

During the construction phase of the project, temporary Best Management Practices (BMP) will be implemented to prevent pollution of downstream resources. In the long term, the basin will capture all suspended solids and potential pollutants to not contribute to any downstream drainageways. Furthermore, a Stormwater Runoff Control Practices and Maintenance Plan will be developed to properly manage permanent BMP features on the future site. Refer to **Appendix "C"**.

The proposed drainage design and development of a Stormwater Runoff Control Practices and Maintenance Plan will insure that the project will have no adverse effects on the existing facilities or on the surrounding environment.

5. Electricity and Telephone Systems

a. Existing Conditions

Electricity and telephone service in the project vicinity is provided by an overhead system along West Main Street and West Alu Road.

b. Potential Impacts and Mitigation Measures

The project will require at least one (1) new Maui Electric Company, Ltd. (MECO) pole to cross West Alu Road via overhead conductors. A riser from the last pole will convert to an underground feed to a new MECO pad-mounted transformer. A standby generator installed at the WTP will automatically start-up to provide full back-up power in the event of a utility outage.

The telephone service for the new treatment building will utilize at least one (1) new MECO pole to cross West Alu Road via overhead conductors.

Addition of these utility services is not anticipated to have adverse impacts on the electrical and telephone services in the area.

E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined by Title 11, Chapter 200, HAR, Environmental Impact Statement Rules as:

> *"the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."*

A "secondary impact" or "indirect effect" from the proposed action are defined by Title 11, Chapter 200, HAR as

> *"effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."*

In this case, the context for analyzing secondary and cumulative impacts is defined by the time horizon within which "reasonably foreseeable" conditions may occur. From a local planning standpoint, the future context for water use and development is established by the Water Use and Development Plan (WUDP) and the Maui County General Plan. Both documents are inseparable, as the General Plan defines parameters for growth, while the WUDP provides a means for meeting the needs of this planned growth. The updated WUDP for Central Maui was adopted by the County Council in December 2010 while the General Plan was updated in 2012. Both documents plan for the horizon year 2030. Both planning documents utilize the same technical data base for planning consistency purposes. Thus, "reasonably foreseeable" conditions may be considered within this future context.

The Maui County General Plan, as set forth in Chapter 2.80.B of the Maui County Code, provides for the update of the County General Plan. The General Plan is a long-term, comprehensive blueprint for the physical, economic, environmental development and cultural identity of the County through 2030. The components of the General Plan include the following:

- The Countywide Policy Plan provides broad policies and objectives which portrays the desired direction of the County's future. It includes a countywide vision, statement of core principles, and objectives and policies for population, land use, the environment, the economy, and housing.

- The Maui Island Plan (MIP) provides a land use strategy, water assessment, nearshore ecosystem assessment, an implementation strategy, and milestone measurements. An essential element of the MIP is a Managed and Directed Growth Plan which identifies existing and future land use patterns and determines planned growth.

- The nine (9) Community Plans provide implementing actions based on consistency with the Countywide Policy Plan and MIP's vision, goals, objectives, and policies.

A discussion of how the proposed project is consistent with specific goals, objectives, and policies of the Countywide Policy Plan, Maui Island Plan, and Wailuku-Kahului Community Plan are presented in Chapter III of this EA document.

Whereas the Countywide Policy Plan covers planning goals and objectives at the broadest levels, and the regional Community Plans consider specific regional needs and opportunities, the MIP and the WUDP may be viewed as parallel plans, in that both address functional elements of the General Plan, and both address islandwide growth parameters which will ultimately dictate water consumption patterns on the island.

The MIP is used by the County Council, Maui Planning Commission, County administration and the community as a policy foundation for day-to-day decision making by doing the following:

- Providing direction for the development of future policies and regulations (for example, zoning and other ordinances, guidelines and area-specific plans that describe what kind of development can occur where);

- Providing policies to help determine the appropriateness of development proposals; and

- Assigning resource for capital investments and programmatic initiatives.

The Directed Growth Plan, which is a key element of the MIP, provides a framework for managing outcomes of growth based on analysis of natural hazards, sensitive lands, cultural resources, scenic corridors, and related environmental and human community parameters. An important component of the Directed Growth Plan is maps that delineate urban and rural growth areas. Referred to as Urban and Rural Growth Boundaries, these maps set the boundaries for the physical limits of development. In so doing, the Directed Growth Plan seeks to manage the use of non-urban and non-rural resources important in sustaining the island to the year 2030.

In light of the foregoing, the assessment of cumulative and secondary impacts is undertaken in the context of planned growth recommended by the General Plan update process, particularly the MIP and its Urban and Rural Growth boundary maps. The proposed urban and rural growth boundaries provide the basis for acknowledging that the proposed Iao WTP will facilitate implementation of the General Plan, as mandated by County Charter.

Future housing and commercial development currently envisioned by the General Plan within the Central Maui Water Service Area represents the "reasonably foreseeable" future for considering potential impacts of the proposed project. The spatial order of development of these units is not defined, however, as development timelines are governed by market conditions, discretionary approval processes, and landowners' financial capacity and preference to build. Notwithstanding, proposed water treatment capacity provided by the proposed project will, over time, support the County-planned growth in the region. It is noted that the Iao WTP is but one infrastructural component which is required to ensure that the MIP is implemented as required by the County Charter. Other infrastructure components include the need for sufficient wastewater collection, treatment and disposal capacity, and sufficient regional and local transportation system networks that will provide for community connectivity and mobility.

In summary, the proposed is being planned in consideration of the long-term infrastructural requirements necessary to support planned future growth in the Central Maui region. The proposed project is not anticipated to have a significant adverse impact on the physical environment. Assessing the project in the context of the future planned growth in the Central Maui region in the foreseeable future, the proposed action is not anticipated to result in significant adverse secondary or cumulative impacts.

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawaii Revised Statutes (HRS), all lands in the State have been placed into one (1) of four (4) land use districts by the State Land Use Commission. These land use districts have been designated "Urban", "Rural", "Agricultural", and "Conservation". The Iao WTP site (Parcels 67 and 91) is classified as mainly "Urban" with a small portion of Parcel 91 designated "Agricultural" and is a permitted use within both districts. See **Figure 9**.

B. CHAPTER 226, HRS, HAWAII STATE PLAN

Chapter 226, HRS, also known as the Hawaii State Plan, is a long-range comprehensive plan which serves as a guide for the future long-range development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The proposed action is consistent with the following goals of the Hawaii State Plan:

> *A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.*

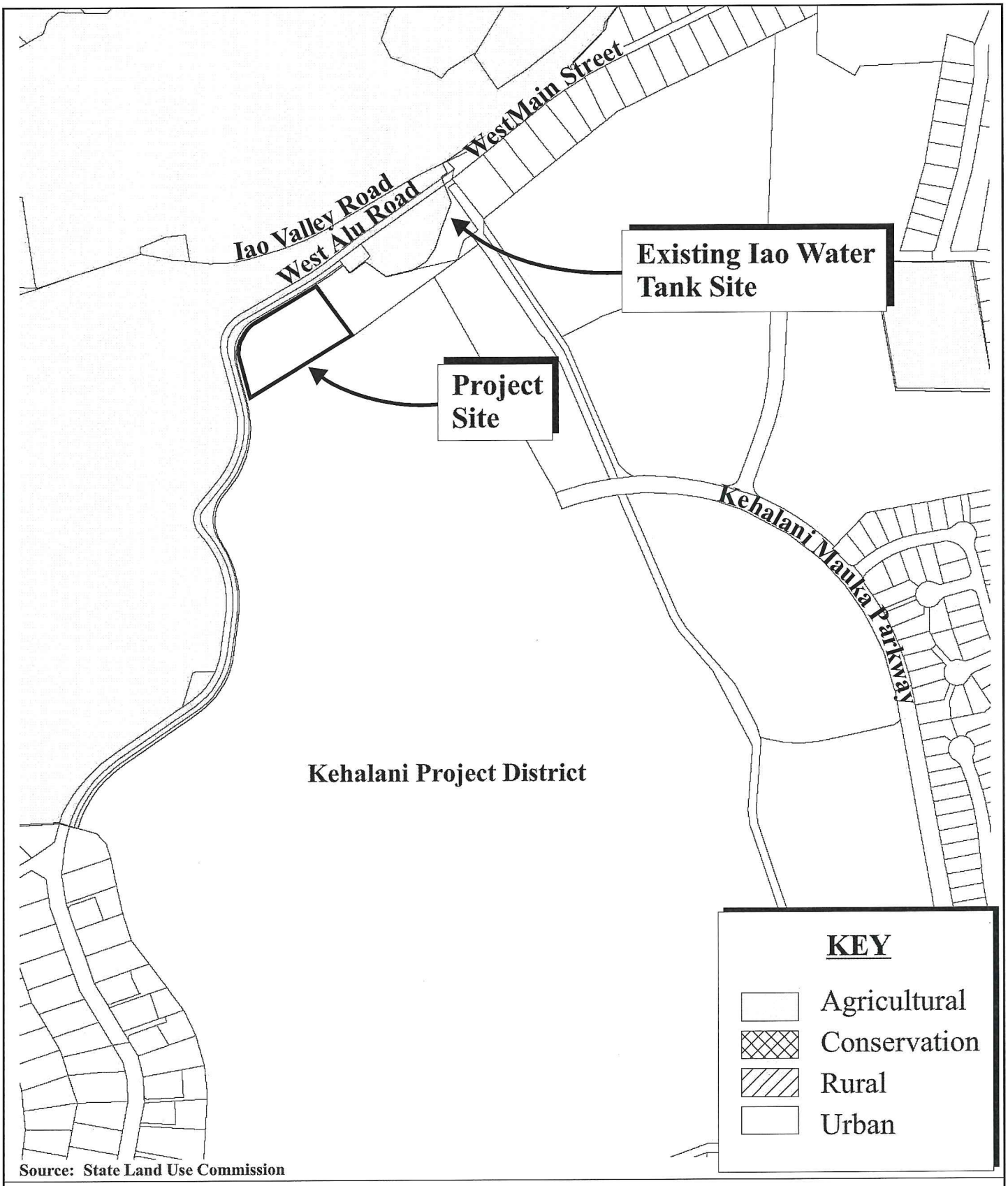
1. Objectives and Policies of the Hawaii State Plan

The proposed action is consistent with the following objectives and policies of the Hawaii State Plan:

Chapter 226-11, HRS, Objectives and Policies for the Physical Environment - Land-Based, Shoreline, and Marine Resources

226-11(b)(3), HRS: *Take into account the physical attributes of areas when planning and designing activities and facilities.*

226-11(b)(4), HRS: *Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.*



Source: State Land Use Commission

Figure 9 Proposed Iao Water Treatment Plant Upgrades

State Land Use District Map

0 75 150 300 Feet

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\State Land Use District Map

226-11(b)(8), HRS: *Pursue compatible relationships among activities, facilities, and natural resources.*

Chapter 226-13, HRS, Objectives and Policies for the Physical Environment - Land, Air, and Water Quality

226-13(b)(2), HRS: *Promote the proper management of Hawaii's land and water resources.*

226-13(b)(3), HRS: *Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.*

Chapter 226-14, HRS, Objectives and Policies for the Facility Systems - In General

226-14(b)(1), HRS: *Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.*

Chapter 226-16, HRS, Objectives and Policies for the Facility Systems - Water

226-16(b)(1), HRS: *Coordinate development of land use activities with existing and potential water supply.*

226-16(b)(4), HRS: *Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.*

2. **Priority Guidelines of the Hawaii State Plan**

The proposed action coincides with the following priority guidelines of the Hawaii State Plan.

Chapter 226-103, HRS, Economic Priority Guidelines:

226-103(e)(4), HRS: *Explore alternative funding sources and approaches to support future water development programs and water system improvements.*

Chapter 226-108, HRS, Sustainability, Priority Guidelines and principles to promote sustainability shall include:

226-108(2), HRS: *Encouraging planning that respects and promotes living within the natural resources and limits of the State.*

C. GENERAL PLAN OF THE COUNTY OF MAUI

As indicated by the Maui County Charter, the purpose of the general plan shall be to:

> *... indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density; land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.*

Chapter 2.80B of the Maui County Code, relating to the General Plan and Community Plans, implements the foregoing Charter provision through enabling legislation which calls for a Countywide Policy Plan. The Countywide Policy Plan was adopted as Ordinance No. 3732 on March 24, 2010.

With regard to the Countywide Policy Plan, Section 2.80B.030 of the Maui County Code states the following.

> *The countywide policy plan shall provide broad policies and objectives which portray the desired direction of the County's future. The countywide policy plan shall include:*
>
> 1. *A vision for the County;*
> 2. *A statement of core themes or principles for the County; and*
> 3. *A list of countywide objectives and policies for population, land use, the environment, the economy, and housing.*

Core principles set forth in the Countywide Policy Plan are listed as follows:

1. *Excellence in the stewardship of the natural environment and cultural resources;*

2. *Compassion for and understanding of others;*

3. *Respect for diversity;*

4. *Engagement and empowerment of Maui County residents;*

5. *Honor for all cultural traditions and histories;*

6. *Consideration of the contributions of past generations as well as the needs of future generations,*

7. *Commitment to self-sufficiency;*

8. *Wisdom and balance in decision making;*

9. *Thoughtful, island appropriate innovation; and*

10. *Nurturance of the health and well-being of our families and our communities.*

Congruent with these core principles, the Countywide Policy Plan identifies goals objectives, policies and implementing actions for pertinent functional planning categories, which are identified as follows:

1. *Natural environment*

2. *Local cultures and traditions*

3. *Education*

4. *Social and healthcare services*

5. *Housing opportunities for residents*

6. *Local economy*

7. *Parks and public facilities*

8. *Transportation options*

9. *Physical infrastructure*

10. *Sustainable land use and growth management*

11. *Good governance*

With respect to the proposed Iao WTP improvements, the following goals, objectives, policies and implementing actions are illustrative of the compliance with the Countywide Policy Plan.

IMPROVE PHYSICAL INFRASTRUCTURE

Goal:

Maui County's physical infrastructure will be maintained in optimum condition and will provide for and effectively serve the needs of the County through clean and sustainable technologies.

Objective:

Improve water systems to assure access to sustainable, clean, reliable, and affordable sources of water.

Policies:

- *Ensure that adequate supplies of water are available prior to approval of subdivision or construction documents.*
- *Develop and fund improved water-delivery systems.*
- *Retain and expand public control and ownership of water resources and delivery systems.*
- *Improve the management of water systems so that surface-water and groundwater resources are not degraded by overuse or pollution.*
- *Seek reliable long-term sources of water to serve developments that achieve consistency with the appropriate Community Plans.*

Objective:

Improve the planning and management of infrastructure systems.

Policies:

- *Provide a reliable and sufficient level of funding to enhance and maintain infrastructure system.*
- *Maintain inventories of infrastructure capacity, and project future infrastructure needs.*
- *Ensure that infrastructure is built concurrent with or prior to development.*

In summary, the proposed project is consistent with the above-noted themes and principles of the Countywide Policy Plan.

D. MAUI ISLAND PLAN

The Maui Island Plan (MIP), is applicable to the island of Maui only, providing more specific policy-based strategies for population, land use, transportation, public and community facilities, water and sewage systems, visitor destinations, urban design, and other matters related to future growth.

As provided by Chapter 2.80B, the MIP shall include the following components:

1. *An island-wide land use strategy, including a managed and directed growth plan*
2. *A water element addressing supply, demand and quality parameters*
3. *A nearshore ecosystem element addressing nearshore waters and requirements for preservation and restoration*
4. *An implementation program which addresses the County's 20-year capital improvement requirements, financial program for implementation, and action implementation schedule*
5. *Milestone indicators designed to measure implementation progress of the MIP*

It is noted that Ordinance No. 4004 does not address the component relating to the implementation program. Chapter 2.80B of the Maui County Code, relating to the General Plan, was amended via Ordinance No. 3979, October 5, 2012, to provide that the implementation program component be adopted no later than one (1) year following the effective date of Ordinance No. 4004. The implementation program component of the MIP was adopted by Ordinance No. 4126 on May 29, 2014.

The MIP addresses a number of planning categories with detailed policy analysis and recommendations which are framed in terms of goals, objectives, policies, and implementing actions. These planning categories address the following areas:

1. *Population*
2. *Heritage Resources*
3. *Natural Hazards*
4. *Economic Development*
5. *Housing*
6. *Infrastructure and Public Facilities*
7. *Land Use*

Additionally, an essential element of the MIP is its directed growth plan which provides a management framework for future growth in a manner that is fiscally, environmentally, and culturally prudent. Among the directed growth management tools developed through the MIP process are maps delineating urban growth boundaries (UGB), small town

boundaries (SRB) and rural growth boundaries (RGB). The respective boundaries identify areas appropriate for growth and their corresponding intent with respect to development character.

The proposed Iao WTP improvements project is located within the UGB. In this regard, it is consistent with the directed growth strategy defined via growth maps adopted in the MIP.

In addition, the proposed project has been reviewed with respect to pertinent goals, objectives, policies and implementing actions of the MIP. A summary of these policy statements are provided below:

INFRASTRUCTURE AND PUBLIC FACILITIES – WATER

Goal:

6.3 Maui will have an environmentally sustainable, reliable, safe, and efficient water system.

Objective:

6.3.2 Increase the efficiency and capacity of the water systems in striving to meet the needs and balance the island's water needs.

Policies:

6.3.2.a Ensure the efficiency of all water system elements including well and stream intakes, water catchment, transmission lines, reservoirs, and all other system infrastructure.

6.3.2.d Work with appropriate State and County agencies to achieve a balance in resolving the needs of water users in keeping with the water allocation priorities of the MIP.

Objective:

6.3.3 Improve water quality and the monitoring of public and private water systems.

Policy:

6.3.3.a Protect and maintain water delivery systems.

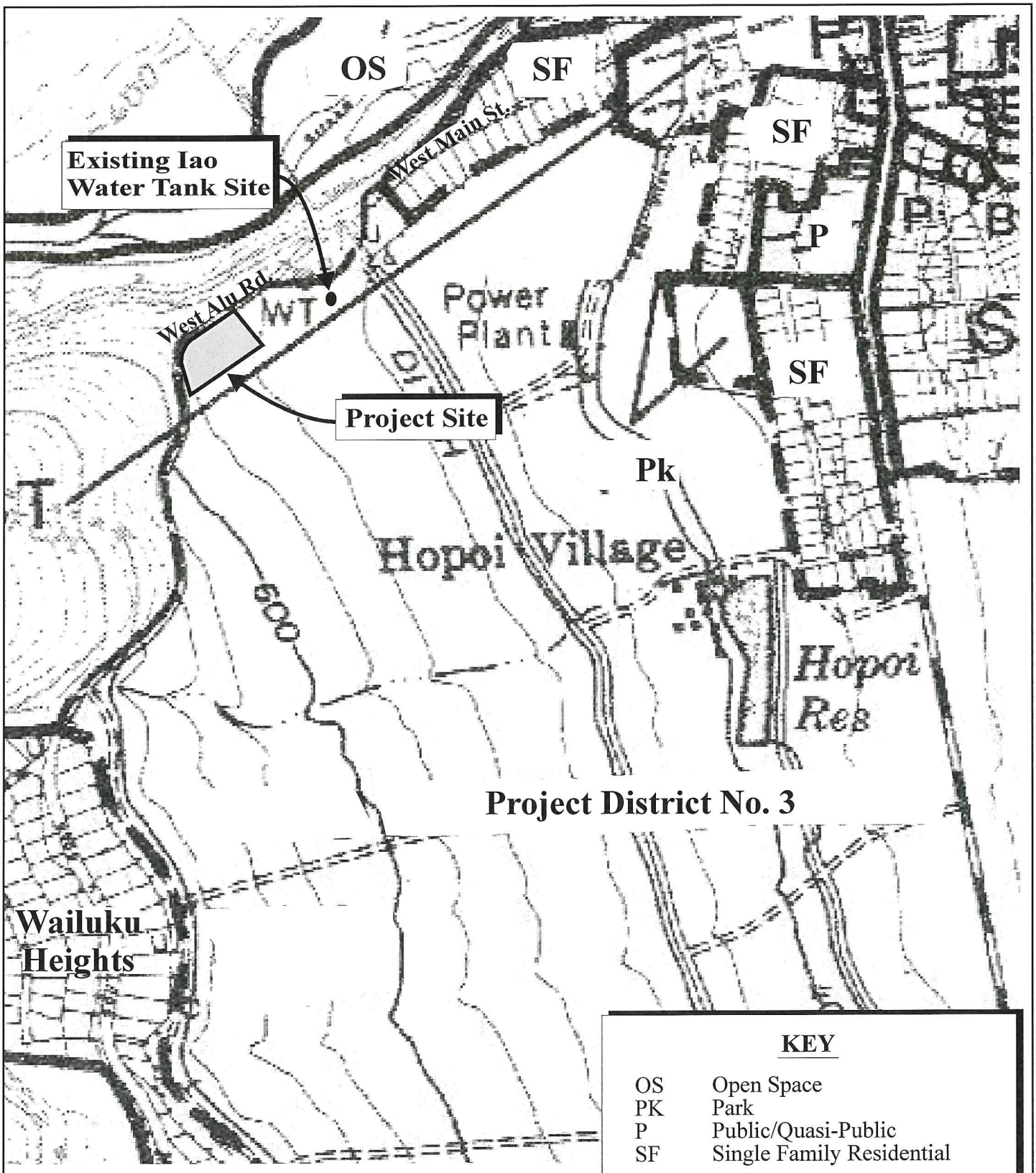
E. WAILUKU-KAHULUI COMMUNITY PLAN

The project site is located within the Wailuku-Kahului Community Plan region, one (1) of nine (9) community plan regions established in the County of Maui. Planning for each region is guided by the respective community plan, which is designed to implement the Maui County General Plan. Each community plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region.

The Wailuku-Kahului Community Plan was adopted by the County of Maui and took effect in 2002. Land use guidelines are set forth by the Wailuku-Kahului Community Plan Land Use Map. The Iao WTP project is designated "Project District 3" by the Wailuku-Kahului Community Plan Map. See **Figure 10** and **Appendix "G"**. The guidelines for Project District 3 calls for:

> *...units of all types, including single family detached, attached and various forms of multi-family units including townhouses and garden apartments. Alternatives to promote affordable housing such as experimental and demonstration housing shall be considered in the residential development.*
>
> *A neighborhood commercial center of at least 20 acres should be provided with convenient access for residences of the project district and adjacent residential areas. Public amenities should include a continuous system of parks and open space areas which would include pedestrian ways and green-belts with buffer zones along the highway.*
>
> *Public use areas should be reserved within the Project District to accommodate a school, park use and any other public facilities that may be required should the need arise in the future.*
>
> *The immediate construction of the Waiale Road extension, from Honoapiilani Highway to its intersection with the Mahalani Road extension, will facilitate access between Kahului and Wailuku.*
>
> *Recommended guidelines for spatial allocations within the project district are:*

School (elementary)	*10 acres*
Park	*20 acres*
Community center	*5 acres*
Open Space, and drainage	*94 Acres*



Source: County of Maui, Planning Department

Figure 10 Proposed Iao Water Treatment Plant Upgrades

Wailuku-Kahului Community Plan Map

NOT TO SCALE

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\CommPlanMap

Neighborhood commercial center	*20 acres*
Residential use	*396 acres*
Residential units based on an average density of 5.1 units per acre	*2,000 units*

The proposed action is consistent with the following goals, objectives, and policies of the Wailuku-Kahului Community Plan.

GOVERNMENT

Goal:

Government that demonstrates the highest standards of fairness; responsiveness to the needs of the community; fiscal integrity; effectiveness in planning and implementation of programs and projects; a fair and equitable approach to taxation and regulation; and efficient, results-oriented management.

Objectives and Policy:

- *Ensure that adequate infrastructure is or will be available to accommodate planned development.*

INFRASTRUCTURE

Goal:

Timely and environmentally sound planning, development and maintenance of infrastructure systems which serve to protect and preserve the safety and health of the region's residents, commuters and visitors through the provision of clean water, effective waste disposal and drainage systems, and efficient transportation systems which meet the needs of the community.

Objectives and Policies:

- *Coordinate water system improvement plans with growth areas to ensure adequate supply and a program to replace deteriorating portions of the distribution system. Future growth should be phased to be in concert with the service capacity of the water system.*

- *Improve the quality of domestic water.*

- *Protect water resources in the region from contamination, including protecting ground water recharge areas, and wellhead protection areas within a 1.25-mile radius from the wells.*

- *Coordinate the construction of all water and public roadway and utility improvements to minimize construction impacts and inconveniences to the public.*

F. COUNTY ZONING

The Iao WTP site (Parcel 67) and Parcel 091 (Lot T-1), which will provide access to the Iao WTP, are located within the "Wailuku Project District 3 (Kehalani)", according to Maui County zoning. The purpose of this project district is to "*provide for a flexible and creative approach to development which considers physical, environmental, social, and economic factors in a comprehensive manner*". *And, the intent of this project district is to "establish a residential community along with an integrated open space and recreation system, future school sites, and community shopping facilities to serve the expanding Wailuku-Kahului population*". The Iao WTP project site is designated for "single-family residential" use within the Wailuku Project District 3 (Kehalani) for TMK (2) 3-5-001:067(por.). The access driveway portion of the project is proposed within the adjacent TMK (2) 3-5-001:091(por.) that is designated as "Public/Quasi Public". Project District Phase II and Phase III applications will need to be submitted and approved in order for the proposed project to proceed. Refer to **Appendix "G"**.

Criteria considered in the assessment of a Phase II Project District approval for the proposed project are set forth in MCC Chapter 19.45 and are as follows:

1. Infrastructure Service for Project Site

Infrastructure services to the proposed project site are provided as summarized below.

a. Access

Access to the project site will be provided by a driveway off of Alu Road through the adjacent parcel, TMK (2)3-5-001:091. DWS will acquire lands for the driveway through Parcel 091 (Lot T-1).

b. Water

Water service for the project site will be provided by the County DWS. A 12-inch service waterline will tap into DWS's 12-inch main in West Alu

Road to provide service water to the WTP. The service line will provide source water for the WTP plumbing fixtures, washdown facilities, etc. The service line will also provide for fire protection for the WTF via an on-site fire hydrant.

c. Wastewater

Wastewater generated from the restroom, lunchroom and office/laboratory, and water from floor drains throughout the TPB will connect to an on-site 6-inch gravity line with cleanouts that transitions into an off-site 8-inch gravity line with manholes. This 8-inch gravity line will convey the wastewater to a discharge point into an existing sewer manhole along West Alu Road.

d. Drainage Improvements and Erosion Control

The proposed improvements for this project will be designed in accordance with the Department of Public Works (DPW) Storm Drainage Rules and will conform to the drainage design set forth in the approved Kehalani Mauka Development drainage master plan. The runoff from the proposed project site and its offsite contributing areas will be collected by a new onsite storm drain system. The proposed storm drain system will have adequate capacity and the post-development runoff will be retained.

Erosion control and water quality measures will be provided to minimize pollution during and after construction. Best Management Practices may include temporary sediment basins, temporary diversion berms and swales to intercept runoff, silt fences, dust fences, slope protection, stabilized construction entrances and truck wash-down areas. Periodic water spraying of loose soils will be employed to minimize air-borne dirt particles. The project will also need to apply for and meet the requirements of a National Pollution Discharge Elimination System (NPDES) permit.

The project will also comply with the County's recently adopted "Rules for the Design of Storm Water Treatment Best Management Practices".

e. **Landscaping**

The proposed project is for a water treatment plant and associated facilities. Landscaping will be included on the south boundary to offset the impacts of the WTP building and sludge lagoons. Refer to **Appendix "B"**, Sheet L-4.

2. **Proposals for Recreation and Community Facilities**

The proposed project involves the construction of a water treatment plant and related facilities. There are no proposals for recreation and community facilities associated with the proposed action.

3. **Proposals for Floor Area Ratios, Lot Coverage, Net Buildable Areas, Open Space**

The project site is approximately 2.6 acres in size. The proposed project includes an approximately 9,800 square foot Treatment Plant Building (TPB) which will house a filtration area, office, break room, generator room, storage, and other related uses. The TPB will cover approximately nine (9) percent of the lot. A site plan and plans for the TPB are provided in the Preliminary Engineering Report. Refer to **Appendix "A"**.

4. **Statement on Potential Environmental, Socioeconomic, and Aesthetic Impacts**

See Chapter II of the Final EA.

G. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

Pursuant to Chapter 205-A, Hawaii Revised Statutes, projects should be evaluated with respect to Coastal Zone Management (CZM) objectives, policies and guidelines. The project site is approximately 2.5 miles away from the coastline and will not involve work within the County of Maui's Special Management Area (SMA). However, the applicability of coastal zone management considerations has been reviewed and assessed.

1. **Recreational Resources**

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

(a) Improve coordination and funding of coastal recreational planning and management; and

(b) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The project site is located inland, approximately 2.5 miles from the coastline. Based on the location of the project, there are no anticipated impacts on coastal recreational opportunities or existing public access to the shoreline.

2. **Historic Resources**

Objective:

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

(a) Identify and analyze significant archeological resources;

(b) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(c) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: Cultural interviews were conducted for the project site. As discussed previously, the interviewees did not identify any cultural activities within the project area and concluded that the exercise of native Hawaiian rights, or any ethnic group, related to gathering, access or other customary activities will not be affected by the proposed project. Refer to **Appendix "F"**.

An Archaeological Assessment of the project site also did not identify any surface or subsurface cultural remains, historic surface features, or architecture. State Historic Preservation Division (SHPD) recommended an Archaeological Inventory Survey with subsurface testing be conducted in addition to the Archaeological Assessment conducted. However, after a site visit by SHPD in July 2015, it was determined that no subsurface testing was required. As such, the proposed project is not anticipated to have an adverse impact on any significant historic properties. Refer to **Appendix "E"**.

3. **Scenic and Open Space Resources**

Objective:

Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

(a) Identify valued scenic resources in the coastal zone management area;

(b) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(c) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(d) Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The project site does not lie within a coastal scenic view corridor nor along the shoreline. The infrastructure development at the Iao WTP facility will primarily entail low-profile improvements. The treatment plant building will be a single-story building. For these reasons, no adverse impacts on scenic or open space resources are anticipated.

4. Coastal Ecosystems

Objective:

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

(a) Improve the technical basis for natural resource management;

(b) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(c) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

(d) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Response: As previously noted, due to the project site's location (over two (2) miles) away from the shoreline, there are no anticipated impacts to coastal ecosystems from the proposed project.

5. **Economic Uses**

Objective:

Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

(*a*) *Concentrate coastal dependent development in appropriate areas;*

(*b*) *Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*

(*c*) *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*

(*i*) *Use of presently designated locations is not feasible;*

(*ii*) *Adverse environmental effects are minimized; and*

(*iii*) *The development is important to the State's economy.*

Response: The proposed project will generate short-term construction-related employment and spending which will benefit the local economy. The proposed action does not contradict the objectives and policies for economic uses. Furthermore, the proposed project is part of the County's efforts to maintain and improve potable water service to businesses and residents in the area.

6. **Coastal Hazards**

Objective:

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

(a) *Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;*

(b) *Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;*

(c) *Ensure that developments comply with requirements of the Federal Flood Insurance Program;*

(d) *Prevent coastal flooding from inland projects; and*

(e) *Develop a coastal point and nonpoint source pollution control program.*

Response: The project site falls within Zone X, an area of minimal flooding, as indicated by the Flood Insurance Rate Map for the County of Maui. Refer to **Figure 7**. Best Management Practices (BMPs) will be implemented during the construction phase to mitigate potential erosion and stormwater impacts. BMPs include the installation of drain inlet filters and silt fences along the eastern, down-slope border of the project site. Upon completion of construction, all open areas will be covered with gravel or vegetation to provide adequate slope maintenance on the property.

7. Managing Development

Objective:

Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

(a) *Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*

(b) *Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and*

(c) *Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in*

terms understandable to the public to facilitate public participation in the planning and review process.

Response: The HRS Chapter 343 EA involves review by governmental agencies and provide for public involvement opportunities to comment on the project. Applicable State and County requirements will be adhered to in the design and construction of the project. Further, opportunities for review of the proposed action are offered through the regulatory review process for the Project District permitting for the project.

8. Public Participation

Objective:

Stimulate public awareness, education, and participation in coastal management.

Policies:

(a) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;

(b) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

(c) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Response: The project will meet County public awareness, education and participation objectives. Opportunities for agency and public review will be provided as part of the notification review and comment process required for the EA as well as the Project District permitting. On January 20, 2015, the DWS presented the proposed project at a Kehalani Community Association Board meeting to solicit input.

Board members made aesthetic requests on the color of the Chlorine Contact Tank (CCT) and Treatment Plant Building (TPB) which will be addressed in the final plans. Also, the Board requested that tall trees be planted along the south boundary to obscure the view of the CCT and TPB. See landscape planting plan Sheet L-4 in **Appendix "B"**.

The DWS provided another project presentation at the annual Kehalani Homeowners Association meeting on April 1, 2015. There were technical questions concerning water sources which were answered by DWS engineers.

A public presentation of the Draft Environmental Assessment was made at the Maui Planning Commission's regular meeting on May 12, 2015. A list of comments and questions are documented in a letter from the County of Maui, Department of Planning on behalf of the Commission to which formal responses were generated. See Chapter IX of this Final EA.

As part of the Project District Phase II application process, a formal public hearing will be held with the Maui Planning Commission, whereby all property owners located within five-hundred (500) feet of the project parcel will be notified of the public hearing date by certified mail.

9. Beach Protection

Objective:

Protect beaches for public use and recreation.

Policies:

(a) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

(b) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

(c) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: The proposed project is located inland, approximately 2.5 miles from the shoreline. As a result, there are no anticipated adverse impacts on beach resources.

10. Marine Resources

Objective:

Implement the State's ocean resources management plan.

Policies:

(a) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(b) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(c) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

(d) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(e) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

(f) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: As previously stated, the project site is located inland, 2.5 miles away from the ocean and is therefore, not anticipated to have any adverse impact on marine or coastal resources.

In addition to the foregoing objectives and policies, HRS Section 205A-30.5 Prohibitions, provides specifications for the limitation of lighting in coastal shoreline areas in relation to the granting of SMA permits:

No special management area use permit or special management area minor permit shall be granted for structures that allow artificial light from floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:

(1) Directly illuminates the shoreline and ocean waters; or

(2) Is directed to travel across property boundaries toward the shoreline and ocean waters.

(b) Subsection (a) shall not apply to special management area use permits for structures with:

- - -

(2) Artificial lighting provided by a government agency or its authorized users for government operations, security, public safety, or navigational needs; provided that a government agency or its authorized users shall make reasonable efforts to properly position or shield lights to minimize adverse impacts.

Response: The proposed project is not located on or near the shoreline. Nevertheless, project lighting will be shielded to direct light downward.

H. HAWAII DRINKING WATER STATE REVOLVING FUND ENVIRONMENTAL CROSSCUTTERS

The proposed project will be funded in part by the Hawaii Drinking Water State Revolving Fund (DWSRF). As such, the project must comply with the Environmental Cross-Cutters and Federal Requirements for DWSRF projects. **Table 2** below provides a listing of the environmental cross-cutters as well as the documentation received for the proposed Iao WTP project in addressing the requirement criteria.

Table 2. Environmental Cross-Cutters and Project Documentation

Environmental Authority	Procedure	Responsible Agency	Response	Project Documentation
Archaeological and Historical Preservation Act of 1974	Obtain review for all projects	State Historic Preservation Division (SHPD)	An Archaeological Field Inspection was prepared in October 2013. The Draft EA was provided to SHPD for review and comment. The Archaeological Assessment was submitted to SHPD for approval.	Refer to Archaeological Assessment in **Appendix "E"**.
Clean Air Act	Coordinate to assure project conforms with State Implementation Plan (SIP)	State Department of Health, Clean Air Branch	The Draft EA was provided to the Department of Health for review and comment.	See Chapter II (Section A-10) of Final EA for discussion of potential air quality impacts and mitigation measures.
Coastal Barrier Resources Act	Obtain review if project is located on a coastal barrier island	State Coastal Zone Management Agency	Not applicable. Project site is not located on a coastal barrier island.	Not applicable.
Coastal Zone Management Act	Obtain review if project is located in coastal zone	State Coastal Zone Management Agency	Pursuant to Chapter 205A-1, the project site is within the Coastal Zone Management Area. The project site is, however, outside of the Special Management Area (SMA). A SMA permit is not required.	See Chapter III (Section G) of this EA document for discussion of the Coastal Zone Management Program review criteria.

Environmental Authority	Procedure	Responsible Agency	Response	Project Documentation
Endangered Species Act	Obtain review by U.S. Fish and Wildlife Service for all projects	U.S. Fish and Wildlife Service (USFWS)	A biological survey for the proposed project found no federally listed endangered or threatened species of flora or fauna and did not identify any critical habitats. The USFWS was consulted during the preparation of the Draft EA and also provided comments on the Draft EA.	Refer to **Appendix "D"** for the biological survey. See Chapter VIII and Chapter IX of this EA document for copies of the USFWS comment letter.
Environmental Justice	Are low income and minority groups affected?	U.S. Environmental Protection Agency	No low-income or minority groups will be adversely affected as a result of the proposed project. The Draft EA was provided to the U.S. Environmental Protection Agency for review and comment.	Refer to Chapter II (Section B) of this EA document for a discussion of socioeconomic and demographic parameters.
Floodplain Management	Obtain review if project is located in or affects 100-year flood plain	Federal Emergency Management Agency	Not applicable. Project site is located in Flood Zone X and is not located in nor will it affect a 100-year flood plain.	Refer to Chapter II (Section A-5) of this EA document.
Protection of Wetlands	Obtain review if project area contains wetlands	U.S. Army Corps of Engineers (COE)	Not applicable. The project site does not contain any wetlands. The U.S. Army Corps of Engineers was consulted during the early consultation process for the Draft EA and reviewed the Draft EA.	See comment letter from U.S. Army Corps of Engineers in Chapter VIII and Chapter IX of this EA document.

Environmental Authority	Procedure	Responsible Agency	Response	Project Documentation
Farmland Protection Policy Act	Obtain review if project area contains prime farmland	Natural Resources Conservation Service (NRCS)	The site contains lands designated as "Prime" agricultural lands by the Agricultural Lands of Importance to the State of Hawaii (ALISH) map. The WTP site and surrounding areas were cultivated with sugar cane from the mid-1800s to the 1990s. However, this area is currently vacant and undeveloped and is slated for residential development.	Refer to Chapter II (Section A-3) of this EA document for a discussion of agricultural resources.
Fish and Wildlife Coordination Act	Obtain review for all projects	USFWS	Comments from USFWS were received during the preparation of the Draft EA and Final EA.	Refer to Chapter VIII and Chapter IX of this EA document for the comments from USFWS.
National Historic Preservation Act	Obtain review for all projects	SHPD	An Archaeological Assessment was prepared in October 2013. The Draft EA was provided to SHPD for review and comment. The Archaeological Field Inspection was submitted to SHPD for approval.	Refer to the Archaeological Assessment in **Appendix "E"**.
Safe Drinking Water Act	Obtain review if project could affect sole source aquifer	State Department of Health, Safe Drinking Water Branch (SDWB)	The proposed project will not affect a sole source aquifer. The Draft EA was provided to the Department of Health for review and comment.	Refer to Chapter II (Section A-6 and Section D-2) of this EA document for a discussion of water quality mitigation measures.

Environmental Authority	Procedure	Responsible Agency	Response	Project Documentation
Wild and Scenic Rivers Act	Obtain review if project is located in area with Wild and Scenic Rivers	National Park Service	The project site is not located in an area with Wild or Scenic Rivers. There are no Wild or Scenic Rivers in the State of Hawaii.	Not applicable.
Consultation Process Under the Magnuson-Stevens Fishery Conservation and Management Act	Obtain review if it will affect essential fish habitat	National Marine Fisheries Service	Not applicable. The project site is located approximately 2.5 miles inland of the nearest coastline. The proposed project will not affect essential fish habitats.	Not applicable.

IV. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS AND IRREVERSIBLE AND IRRIETRIEVABLE COMMITMENTS OF RESOURCES

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In the short term, the proposed Iao WTP project will result in unavoidable construction-related impacts, including noise impacts generated by construction equipment and activities. In addition, there may be temporary air quality impacts associated with dust generated from site work and exhaust emissions from construction equipment and vehicles. These noise and air quality impacts will be temporary in nature, occurring only during the 24-month construction period, and will be mitigated to the extent practicable through implementation of Best Management Practices (BMPs).

The proposed project commits a small area of land, about 2.6 acres, for the construction of the Iao WTP. Other resources which will be committed in the implementation of the proposed action include material and fuel resources. The project will result in short-term beneficial impacts related to temporary construction employment and spending.

V. ALTERNATIVES TO THE PROPOSED ACTION

V. ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the preferred alternative, which is the proposed action, include the "no action", "deferred action," and "alternative site location". These alternatives are addressed below.

A. NO ACTION ALTERNATIVE

The existing Iao Water Treatment Plant (WTP) consists of three (3) pressure membrane units that were meant to be temporary and were initially sheltered within a large tent. The tent has since been removed, leaving the units exposed to the elements for a number of years. As a result, DWS deemed the replacement of the pressure membrane units to be necessary. The proposed Iao WTP project involves the construction of a filtration building that will house three (3) new pressure membrane units and providing shelter and protection for the equipment. The proposed project will also have a larger capacity with the ability to produce an average of up to 3.2 mgd of treated water. The "no action" alternative involves the continued reliance on a WTP that was intended for temporary use only and has been left unprotected for a number of years. In addition, the "no action" alternative does not provide for additional water treatment capacity that will be required for the long-term use of the facility. Based on the foregoing factors, the "no action" alternative was not pursued.

B. DEFERRED ACTION ALTERNATIVE

Similar to the no action alternative, the deferred action alternative involves the continued use of the existing, temporary Iao WTP facilities. In addition, the deferred action alternative would likely result in higher implementation costs as the cost of construction and equipment rise in the future. For these reasons, the deferred action alternative was not selected by DWS.

C. ALTERNATIVE SITE LOCATION ALTERNATIVE

This alternative would involve site selection and property acquisition to develop a replacement water treatment facility at a new location. This alternative was not pursued because the site identified in the preferred alternative is adjacent to the existing Iao WTP, the raw water source, and pertinent infrastructure, making it ideally suited for a replacement facility. An alternative site would be a greater distance from the existing facility that the project is replacing and, therefore, was not selected by DWS.

VI. SIGNIFICANCE CRITERIA ASSESSMENT

VI. SIGNIFICANCE CRITERIA ASSESSMENT

The proposed project involves the construction of the Iao WTP improvements in Wailuku. The Iao WTP improvements will consist of a number of improvements including the construction of a Treatment Plant Building (TPB), Chlorine Contact Tank and Sludge Lagoon.

Since the proposed action will involve the use of State and County funds and lands, compliance with Chapter 343, Hawaii Revised Statutes (HRS), and Chapter 200 (Title 11), Hawaii Administrative Rules, Environmental Impact Statement Rules is necessary. Every aspect of the proposed action, expected primary and secondary consequences, and the cumulative as well as the short-term and long-term effects of the action have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of the Administrative Rules. Discussion of project conformance to the Significance Criteria is as follows:

1. **Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.**

   The historic agricultural practices at the project site and in the surrounding areas, have resulted in an environment that is nearly totally lacking in native plants and animal species. There are no endangered or threatened flora or fauna on the site, nor are there any archaeological, historic or cultural resources that may be affected by the proposed project. No impacts to streams or wetlands are anticipated to result from the proposed action.

   An Archaeological Assessment prepared for the project revealed no archaeological, historic, or cultural resources. Also, with the past history of the site being in sugar cane cultivation since the 1860s, archaeological resources would probably be non-existent.

   State Historic Preservation Division (SHPD) recommended in June 2015 an Archaeological Inventory Survey with subsurface testing be conducted in addition to the Archaeological Assessment conducted. Following a site visit in July 2015, SHPD determined that no subsurface testing was required.

   Based on the discussion provided above, the proposed project is not anticipated to involve an irrevocable commitment to loss or destruction of any natural or cultural resource.

2. **Curtails the range of beneficial uses of the environment**

There are no adverse impacts to climate, topography, or soils anticipated to result from the proposed project. There are also no known rare, threatened, or endangered species of flora, fauna, or avifauna located within the project site.

The proposed Iao WTP involves lands designated for urban uses. While the project site was historically used for sugar cane cultivation, active cultivation ended in the 1990s. Furthermore, the project commits a small area of land that is in close proximity to existing DWS infrastructure. Based on the foregoing facts, the proposed project will not curtail the beneficial use of the site.

3. **Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.**

The proposed project does not conflict with the State's Environmental Policy and Guidelines as set forth in Chapter 344, Hawaii Revised Statutes (HRS).

4. **Substantially affects the economic welfare, social welfare, and cultural practices of the community or State.**

The proposed project will directly benefit the local economy by providing construction and construction-related employment. Therefore, the proposed project will have a positive short-term effect on economic and social welfare. From a long-term perspective, the Iao WTP project will ensure that safe and clean drinking water is provided to residents and businesses within the Central Maui service area. The cultural impact assessment did not identify any ongoing cultural practices occurring within the project site. As such, adverse impacts to cultural practices are not anticipated.

5. **Substantially affects public health.**

During the 24-month construction period, appropriate Best Management Practices will be implemented to mitigate potential air quality and noise impacts. Following construction, long-term adverse public health impacts resulting from the proposed project are not anticipated. The proposed Iao WTP project will ensure that safe and clean drinking water continues to be provided to residents and businesses in Central Maui.

6. **Involves substantial secondary impacts, such as population changes or effects on public facilities.**

The proposed project is not anticipated to result in significant adverse secondary impacts. No significant population changes are anticipated as a result of the proposed replacement and upgrade to the existing Iao WTP. There are no anticipated adverse effects on public services, such as police, fire, medical, educational, or solid waste collection, as service limits or service capacities will not be affected.

7. **Involves a substantial degradation of environmental quality.**

Construction activities will create temporary short-term nuisances related to noise and dust. Appropriate dust control and noise mitigation measures will be implemented by the contractor to ensure that fugitive dust and noise generated in connection with construction is minimized.

As previously discussed in Chapter II of this EA document, adverse impacts to natural resources, cultural resources, and the natural environment are not anticipated.

8. **Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.**

The proposed improvements to the Iao WTP are not anticipated to cumulatively have a negative impact on the physical environment. The project does not involve a commitment to larger actions.

9. **Substantially affects a rare, threatened, or endangered species, or its habitat.**

Rare, threatened or endangered species of flora, fauna, avifauna or their habitats are not expected to be affected by the proposed project, due to the fact that there are no rare, threatened, or endangered species or their habitats found on or in the vicinity of the project site.

10. Detrimentally affects air or water quality or ambient noise levels.

Construction activities will result in short-term air quality and noise impacts. Best Management Practices (BMPs) for dust control measures, such as regular watering and sprinkling, and erection of dust screens will be implemented to minimize construction-related air quality impacts. Short-term noise impacts will occur primarily from construction equipment. Equipment mufflers or other noise attenuating equipment, as well as proper equipment and vehicle maintenance and other BMPs are anticipated to mitigate noise from construction activities. Erosion control measures, including the installation of a grated drain inlet filter and silt fences, will reduce the amount of silt and stormwater runoff flowing into downstream properties.

Upon completion of the project, equipment such as compressors, blowers and the standby generator within the TPB will generate noise. These equipment items will be housed within sound attenuated rooms inside the TPB such that applicable State Department of Health day-time and nighttime noise limits at the property lines are met for the compressor and blower. Refer to **Appendix "A".**

Based on the discussion provided above, the proposed project is not anticipated to detrimentally affect air or water quality or ambient noise levels.

11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

The proposed project is not located within an environmentally sensitive area and, as such, there are no anticipated adverse effects as a result of the proposed project.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The proposed project is not anticipated to adversely affect scenic view corridors. The infrastructure development at the Iao WTP will primarily entail low-profile improvements. The structures proposed for the project site will have heights and footprints which are not anticipated to significantly impact scenic vistas and view planes.

13. <u>Requires substantial energy consumption.</u>

The proposed project is a replacement for the existing Iao WTP facility, substantial new energy requirements are not anticipated for the proposed project. Following County of Maui initiative, along with other DWS WTP facilities, solar panels may be installed on the roof in the future.

Based on the aforementioned findings, the DWS has determined that the proposed project will result in a Finding of No Significant Impact (FONSI).

VII. LIST OF PERMITS AND APPROVALS

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The following permits and approvals will be required for the implementation of the project:

State of Hawaii

1. Hawaii Administrative Rules, Chapter 343 Compliance
2. National Pollutant Elimination System (NPDES) Permit, as applicable
3. Commission on Water Resource Management (CWRM), Water Use Permit (WUP), as applicable
4. Department of Health Wellhead Protection Protocols
5. Community Noise Permit, as applicable
6. Oversize/Overweight Vehicle Transport over State Highways Permit, as applicable

County of Maui

1. Project District Phase II and III Approval
2. Construction Permits (i.e., building, electrical, plumbing, and grading)

VIII. PARTIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

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The following agencies were consulted during preparation of the Draft Environmental Assessment (EA). Agency comments and responses to substantive comments are included herein.

FEDERAL AGENCIES

1. Larry Yamamoto, State Conservationist
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2. George Young, Chief, Regulatory Branch
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3. Wayne Nastri, Regional Administrator
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4. Dave Wesley, Deputy Regional Director
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5. Loyal A. Mehrhoff, Field Supervisor
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7. Russell Kokubun, Chair
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8. Richard C. Lim, Director
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9. Jobie Masagatani, Chairperson
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10. Loretta J. Fuddy, Director
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814

11. Alec Wong, P.E., Chief
Clean Water Branch
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814

12. Patti Kitkowski, District Environmental Health Program Chief
State of Hawaii
Department of Health
Maui Sanitation Branch
54 South High Street, Room 300
Wailuku, Hawaii 96793

13. Laura McIntyre, AICP, Office Manager
Environmental Planning Office
Department of Health
919 Ala Moana Blvd., Suite 312
Honolulu, Hawaii 96814

14. Lene Ichinotsubo
Environmental Management Division
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 212
Honolulu, Hawaii 96814

15. William J. Aila, Jr., Chairperson
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

16. Nicki Thompson, Interim Administrator
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

17. Jenny Pickett, Maui Archaeologist
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
130 Mahalani Street
Wailuku, Hawaii 96793

18. Glenn Okimoto, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

19. Major General Darryll Wong, Director
Hawaii State Civil Defense
3949 Diamond Head Road
Honolulu, Hawaii 96813-4495

20. Genevieve Salmonson, Acting Director
Office of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, Hawaii 96813

21. Dr. Kamana`opono Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

22. Jesse Souki, Director
State of Hawaii
Office of Planning
P. O. Box 2359
Honolulu, Hawaii 96804

23. Gil Keith-Agaran, Senator
Hawaii State Senate
Hawaii State Capitol, Room 203
415 S. Beretania Street
Honolulu, Hawaii 96813

24. Joseph Souki, Representative
House of Representatives
Hawaii State Capitol, Room 431
415 S. Beretania Street
Honolulu, Hawaii 96813

COUNTY AGENCIES

25. Alan Arakawa, Mayor
County of Maui
200 South High Street
Wailuku, Hawaii 96793

26. Teena Rasmussen, Coordinator
County of Maui
Office of Economic Development
2200 Main Street, Suite 305
Wailuku, Hawaii 96793

27. Anna Foust, Management Officer
Maui Civil Defense Agency
200 South High Street
Wailuku, Hawaii 96793

28. Jeffrey A. Murray, Fire Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawaii 96732

29. Jo-Ann Ridao, Director
County of Maui
Department of Housing and Human Concerns
One Main Plaza
2200 Main Street, Suite 546
Wailuku, Hawaii 96793

30. Glenn Correa, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2
Wailuku, Hawaii 96793

31. William Spence, Director
County of Maui
Department of Planning
2200 Main Street, Suite 315
Wailuku, Hawaii 96793

32. Gary Yabuta, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

33. David Goode, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Hawaii 96793

34. Kyle Ginoza, Director
County of Maui
Department of Environmental Management
One Main Plaza
2200 Main Street, Suite 100
Wailuku, Hawaii 96793

35. Jo Anne Johnson Winer, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793

36. Council Chair Gladys Baisa
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

37. Councilmember Mike Victorino
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

UTILITIES

38. Dan Takahata, Manager – Engineering
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733

39. Hawaiian Telcom
60 South Church Street
Wailuku, Hawaii 96793

COMMUNITY ORGANIZATIONS

40. Wailuku Community Association
40 Hoauna Street
Wailuku, Hawaii 96793

41. Rick Papa, President
Attention: Tiana Raymondo
Kehalani Association
P.O. Box 1530
Wailuku, Hawaii 96793

42. RCFC Kehalani LLC
c/o Brian Ige
2005 East Main Street
Wailuku, Hawaii 96793

43. Wailuku Water Company LLC
P.O. Box 2790
Wailuku, Hawaii 96793-7790

APR 21 2014

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

April 16, 2014

Regulatory Office

File No. POH-2013-0209

Tessa Munekiyo Ng
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo Ng:

The U.S. Army Corps of Engineers (Corps) has evaluated the early consultation information submitted on October 25, 2013, for the replacement of the existing Iao Surface Water Treatment Plant on South Alu Road. The project site is located within TMK #235001067; Latitude 20.883110° N., Longitude 156.512693° W.; city of Wailuku, Island of Maui, Hawaii. Your project has been assigned number POA-2013-0209, which should be referred to in all correspondence with us.

Based on our review of the information you provided we are not able to determine if the subject project area contains waters of the U.S., and/or wetlands, under the Corps' regulatory jurisdiction. We encourage you to provide the Corps with a wetland delineation based on the guidelines presented in the Corps of Engineers Wetlands Delineation Manual dated January 1987 and the Regional Supplement for Hawaii and Pacific Island Regions dated February 2012.

The Corps' regulatory authorities are based on two laws: Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403), which prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from the Corps; and Section 404 of the Clean Water Act (CWA), which prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a Corps' permit. Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include "muskegs", swamps, marshes, bogs, and similar areas.

You may contact Linda Speerstra via email at linda.speerstra@usace.army.mil, by mail at the address above, or by phone at (808) 835-4300 if you have questions. We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey form. This form is available at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Office

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MIGH" HIRANO
SENIOR ADVISOR

January 29, 2015

George P. Young, P.E.
Chief, Regulatory Office
Department of the Army
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, Hawaii 96858-5440

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.) File No. POH-2013-0209

Dear Mr. Young:

Thank you for your correspondence dated April 16, 2014, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. On behalf of the County of Maui, Department of Water Supply (DWS) we offer the following information in response to the comments noted in your letter.

There are no streams or wetlands within the project site. Iao Stream is located approximately 500 feet north of the project site. The stream is north of Iao Valley Road and generally runs west to east lying at a much lower elevation than the project site. The project site falls within Zone X, an area of minimal flooding, as indicated by the Flood Insurance Rate Map for the County of Maui. Thus the area does not experience inundation or saturation by surface or groundwater at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions, normally found in wetland area. The Draft Environmental Assessment will include a discussion of streams and wetlands.

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305 High St., Suite 104 Wailuku, Hawaii 96793
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OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Manager

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakatsuka, Austin Tsutsumi & Associates, Inc.
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From: Ian Bordenave <ian bordenave@fws.gov>
Sent: November 27, 2013 at 5:15:40 PM CST
To: <planning@mhplanning.com>
Subject: **c/o Tessa Munekiyo Ng: 2014-TA-0037 Iao Water Treatment Plant Upgrades Project, Maui**

In Reply Refer To:
2013-TA-0037

Ms. Tessa Munekiyo Ng
Senior Associate
Munekiyo and Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Subject: Technical Assistance for the Proposed Iao Water Treatment Plant Upgrades Project, Maui

Dear Ms. Ng:

The U.S. Fish and Wildlife Service (Service) received your letter on October 28, 2013, requesting comment on proposed upgrades to the Iao Surface Water Treatment Plant located on South Alu Road in Wailuku [TMK (2) 3-5-001:067]. The proposed project site is to be located west of the existing Maui County, Department Water Supply facility.

Project Description
The County of Maui, Department of Water Supply, proposes to replace the existing Iao Water Treatment Plant with a permanent facility with greater production capacity. The existing treatment plant filtration units, located near the three million gallon Iao Water Tank, were initially sheltered within a large tent that has since been removed. Exposure to the elements has degraded the filtration equipment, which has made their replacement necessary. Filtration capacity of the existing plant is approximately 1.7 million gallons per day (gpd). The proposed plant, in addition to being housed in a permanent structure, will increase production capacity to 2.4 million gpd. Additional provisions may allow future expansion of production to increase to 3.0 million gpd.

Species Affected
Based on information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity and Mapping Program, three species protected by the Endangered Species Act (ESA) of 1973, as amended (16 U.S.c. 1531 *et seq.),* are known to occur within the proposed action area and could be impacted by the proposed action: the endangered Hawaiian hoary bat *(Lasiurus cinereus semotus),* Hawaiian petrel *(Pterodroma sandwichensis),* and the threatened Newell's shearwater *(Puffinus auricularis newel/i).* The Service offers the following recommendations to minimize and avoid impacts to listed species either on or in the vicinity of the proposed project:

- The Hawaiian hoary bat is known to occur throughout the island of Maui. This bat roosts in both exotic and native woody vegetation and, while foraging, leaves young unattended in "nursery" trees and shrubs. If trees or shrubs suitable for bat roosting are cleared during the hoary bat breeding season (June 1 to September 15), there is a risk that young bats could inadvertently be harmed or killed. As a result, the Service recommends that woody plants greater than 15 feet tall should not be removed or trimmed during the Hawaiian hoary bat breeding season. Additionally, Hawaiian hoary bats forage for insects from as low as three feet to higher than 500 feet above the ground. When barbed wire is used in fencing, Hawaiian hoary bats can become entangled. The Service therefore recommends that barbed wire not be used for fencing as part of this proposed action.

- The Hawaiian petrel and Newell's shearwater, collectively referred to as seabirds, may transit through the proposed action area while flying between the ocean and nesting sites in the mountains during their breeding season (March through December). Seabird fatalities resulting from collisions with artificial structures that extend above the surrounding vegetation have been documented in Hawaii where high densities of transiting seabirds occur. Additionally, artificial lighting, such as flood lighting for construction work and site security, can adversely impact seabirds by causing disorientation which may result in collision with utility lines, buildings, fences, and vehicles. Fledging seabirds are especially affected by artificial lighting and have a tendency to exhaust themselves while circling the light sources and become grounded. Too weak to fly, these birds become vulnerable to depredation by feral predators such as dogs, cats, and mongoose. Therefore, the Service recommends that no outdoor flood lighting be installed as part of the proposed action. Project-related lighting should be minimized. All project-related lights should be shielded so the bulb is not visible at or above bulb-height. Motion sensors and timers should be installed on any necessary project-related lighting to minimize periods of illumination.

Impacts to Aquatic Resources

Under the statutes of the Fish and Wildlife Coordination Act (FWCA) of 1958, as amended (16 U.s.c. 661 *et seq.;* 48 Stat. 401), any private or public entities operating under Federal permit or license are required to ensure that fish and wildlife conservation receives equal consideration with other proposed project objectives. A significant increase in water supply production capacity resulting from the implementation of the proposed project may have impacts on aquatic habitat functions necessary to support native stream fauna. The Service recommends that the applicant and action agencies involved in the proposed project coordinate with us to address the potential impacts that an additional 700,000 1,000,000+ gpd withdrawal from the lao Stream watershed may incur on native stream fauna and concomitant aquatic resources.

If you have any questions regarding the recommendations or comments provided in this e-mail, please feel free to contact me during regular business hours using the information provided below.

Regards,

Ian Bordenave
Biologist
U.S. Fish and Wildlife Service
Maui Nui Field Station
Milepost 6 Mokulele Highway
Kihei, HI. 96793
Phone: (808) 270-1439
E-Mail: ian__ bordenave@fws,gov

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MIGH" HIRANO
SENIOR ADVISOR

January 29, 2015

Ian Bordenave, Biologist
Director of Transportation
U.S. Fish and Wildlife Service
Maui Nui Field Station
Milepost 6 Mokulele Hwy
Kihei, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.); 2013-TA-0037

Dear Mr. Bordenave:

Thank you for your correspondence dated November 27, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

A biological resources survey for the proposed project was conducted by Robert W. Hobdy (Environmental Consultant) in August 2013. The report concludes that the project is not expected to have any significant negative impacts on the botanical resources in this part of Maui. No recommendations regarding botanical resources were deemed necessary or appropriate.

Despite the negative findings of the biological resources survey, DWS will address each of the concerns outlined in your letter as follows:

- **Hawaiian Hoary Bat:**
  The biological resources survey made a special effort to look for the Hawaiian hoary bat, but no evidence of bat activity was detected. DWS will restrict clearing

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and grubbing activities during the hoary bat breeding season from June 1 to September 15. Due to public health concerns and the need to secure the water treatment facility, barbed wire fencing must be used.

- **Hawaiian Petrel and Newell's Shearwater:**
  The site design will minimize outdoor lighting and implement other mitigating actions such as bulb shielding and installing motion sensors and timers. No night work is expected unless under an emergency situation.

- **Potential Impacts on Native Stream Fauna and Concomitant Aquatic Resources:**
  The amount of water allowed for use at the Iao Water Treatment Plant was arrived at in a recent agreement accepted by all parties (Hui o Na Wai Eha, Maui Tomorrow Foundation, the Office of Hawaiian Affairs, Hawaiian Commercial and Sugar Company, Wailuku Water Company, the Maui County Department of Water Supply, and the State Commission on Water Resource Management). Impacts to streams were taken into consideration during discussions on the agreement. With anticipated growth in the Central Maui system that encompasses customers from Hookipa to Makena, and the fact that the Iao aquifer is designated, surface water is needed to provide water for future growth.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 04 2013

NEIL ABERCROMBIE
GOVERNOR

Dean H. Seki
Comptroller

Maria E. Zielinski
Deputy Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)1253.3

NOV 1 2013

Ms. Tessa Munekiyo Ng
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo Ng:

Subject: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii: DWS Job No. 12-03
TMK: (2) 3-5-001:067 (por) and 091 (por).

Thank you for the opportunity to provide comments for the subject project. This project does not impact any Department of Accounting and General Services' projects or existing facilities in this area and we have no comments to offer at this time.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Alva Nakamura of the Public Works Division at 586-0488.

Sincerely,

DEAN H. SEKI
Comptroller

c: Mr. Tom Ochwat, County of Maui, Dept. of Water Supply
Mr. Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Dean H. Seki, Comptroller
Department of Accounting and General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96810-0119

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Mr. Seki:

Thank you for your letter, dated November 1, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) acknowledges your Department has no comments to offer on the proposed project at this time.

We appreciate your input and will include a copy of your response letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.

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NOV 0 6 2013

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
EMD/CWB

10104PCM.13

October 31, 2013

Ms. Tessa Munekiyo Ng, AICP
Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo Ng:

SUBJECT: Early Consultation Request for the Proposed Iao Water Treatment Plant Upgrades Wailuku, Island of Maui, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated October 25, 2013, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the CWB Individual NPDES Form through the e-Permitting Portal and the hard copy certification statement with $1,000 filing fee. Please open the e-Permitting Portal

website at: https://eha-cloud.doh.hawaii.gov/epermit/View/home.aspx. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the "CWB Individual NPDES Form." Follow the instructions to complete and submit this form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommend that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 438-9258) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF
Clean Water Branch

CM:rh

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

CARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO N'G
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Alec Wong. P.E., Chief
Clean Water Branch
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.); EMD/CWB 10 104 PCM.13

Dear Mr. Wong:

Thank you for your letter, dated October 13, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

The County of Maui DWS will fully comply with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55 and any additional requirements related to Department of Health – Clean Water Branch programs. More specifically, the following actions will be taken to address comments detailed in your letter as follows:

1. DWS will assess project impacts to State waters and meet criteria on antidegradation policy (FAR, Section 11-54-1.1), designated uses (HAR, Section 11-54-3), and water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. If required per HAR, Chapter 11-55, an NPDES permit will be obtained.

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3. The U.S. Army Corps of Engineers, Regulatory Branch has been consulted regarding the proposed project. A request for early consultation was submitted to the Corps and they will be provided with a copy of the Draft Environmental Assessment (EA).

4. Whether or not an NPDES permit applies, DWS will include all contractual requirements in the project's bid documents to insure Best Management Practices are implemented.

We appreciate your input and will include a copy of your comment letter in the Draft EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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OCT 31 2013

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793

October 30, 2013

Ms. Tessa Munekiyo Ng, AICP
Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo Ng:

Subject: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii; DWS Job No. 12-03 TMK: (2) 3-5-001:067 (por.) and 091 (por.)

Thank you for the opportunity to review this project. We have the following comments to offer:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage maybe required for this project. The Clean Water Branch should be contacted at 808 586-4309

2. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules (HAR), Chapter 11-46, "Community Noise Control." A noise permit may be required and should be obtained before the commencement of work. The Indoor & Radiological Health Branch should be contacted at 808 586-4700.

It is strongly recommended that the Standard Comments found at the Department's website: http://health.hawaii.gov/epo/home/landuse-planning-review-program/ be reviewed, and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please call me at 808 984-8230 or E-mail me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c EPO

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Patti Kitkowski
Maui District Environmental Health Program Chief
Department of Health
State of Hawaii
54 High Street
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Ms. Kitkowski:

Thank you for your letter, dated October 30, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

The County of Maui DWS has received comments from the Department of Health (DOH), Clean Water Branch (CWB) on NPDES permit requirements and other regulatory requirements of that branch. DWS will comply as applicable.

Should noise levels associated with project construction exceed the maximum allowable levels set forth in Hawaii Administrative Rules, HAR Chapter 11-46 "Community Noise Control", a noise permit will be obtained prior to initiation of construction.

It is also noted that the Standard Comments available on the Department's website will be reviewed and comments applicable to the project will be adhered to.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 06 2013

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:
13-208
Iao WTP Upgrades
DWS Job No. 12-03

October 30, 2013

Munekiyo & Hiraga, Inc.
Attention: Tessa Munekiyo Ng, AICP, Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ng:

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, DWS Job No. 12-03
Wailuku, Maui, Hawaii; TMK: (2) 3-5-01: 067 (por.) and 091 (por.)

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated October 25, 2013. Thank you for allowing us to review and comment on the subject document. The document was routed to the relevant Environmental Health divisions and offices. They will provide specific comments to you if necessary. EPO recommends that you review the standard comments at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/.
You are required to adhere to all standard comments specifically applicable to this application.

EPO suggests that you examine the many sources available on strategies to support the sustainable design of communities, including the:
State of Hawaii, Office of Planning: www.planning.hawaii.gov and the new 2013 ORMP;
U.H., School of Ocean and Earth Science and Technology: www.soest.hawaii.edu;
U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability; and
U.S. Green Building Council's LEED program: www.usgbc.org/leed.

The DOH encourages everyone to apply these sustainability strategies and principles early in the planning and review of projects. We also request that for future projects you consider conducting a Health Impact Assessment (HIA). More information is available at: www.cdc.gov/healthyplaces/hia.htm. We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.

We require a written response confirming receipt of this letter and any other letters you receive from DOH in regards to this submission. You may mail your response to 919 Ala Moana Blvd., Ste. 312, Honolulu, Hawaii 96814. However, we would prefer an email submission to: epo@doh.hawaii.gov. We anticipate that our letter(s) and your response(s) will be included in the final document. If you have any questions, please contact me at (808) 586-4337.

Mahalo,

Laura Leialoha Phillips McIntyre, AICP
Manager, Environmental Planning Office

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Laura Leialoha Phillips McIntyre, AICP
Manager, Environmental Planning Office
State of Hawaii
Department of Health
919 Ala Moana Blvd., Ste.312
Honolulu, Hawaii 96814

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.); 13-208 Iao WTP Upgrades DWS Job No. 12-03

Dear Ms. McIntyre:

Thank you for your letter, dated October 30, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

The County of Maui, DWS will review Department of Health, Environmental Planning Office's standard comments detailed in the website noted in your letter, and adhere to comments specifically applicable to the proposed project. Also, sustainable design strategies will be considered on the proposed project.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: *(808)244-2015* fax: *(808)244-8729*
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: *(808)983-1233*
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 18 2013

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
SAFE DRINKING WATER BRANCH
919 ALA MOANA BLVD., ROOM 308
HONOLULU, HI 96814-4920

In reply, please refer to:
File: SDWB
IaoWTP01.docx

November 13, 2013

Ms. Tessa Munekiyo Ng
Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo Ng:

SUBJECT: EARLY CONSULTATION REQUEST FOR PROPOSED
IAO WATER TREATMENT PLANT UPGRADES
WAILUKU, ISLAND OF MAUI, HAWAII

The Safe Drinking Water Branch (SDWB) acknowledges receipt of the letter dated October 25, 2013, from your office requesting our comments regarding the subject project.

The following are our comments regarding the subject application:

This project to replace the Iao water treatment plant appears to be a substantial modification to the County of Maui's Wailuku water system.

Projects proposing to develop new public water systems or proposing substantial modifications to existing public water systems must receive approval by the Director of Health prior to construction of the proposed system or modification in accordance with Hawaii Administrative Rule, Section 11-20-30, "New and modified public water systems." These projects include treatment, storage and distribution systems of public water systems. This requirement is not waived for county owned systems using a surface water source.

The requirement includes submission of plans, specifications, supporting information, and documents detailing the design of the proposed substantial modifications to the SDWB for approval.

If there are any questions, please call Mr. Craig Watanabe of the SDWB Engineering Section, at (808) 586-4258.

Sincerely,

Joanna L Seto

JOANNA L. SETO, P.E., CHIEF
Safe Drinking Water Branch

CW:slm

c: EPO #13-208 [via email only]

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO N'E
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Joanna L. Seto, P.E., Chief
Safe Drinking Water Branch
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.); SDWB Iao WTP 01.docx

Dear Ms. Seto:

Thank you for your letter, dated November 13, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

As advised, the County of Maui DWS will fully comply with Hawaii Administrative Rules (HAR), Chapters 11-20-301-55 "New and modified public water systems". Once the plans, specifications, supporting information, and documents detailing the project's design is developed, a package will be submitted to your branch for review and approval by the Director of Health.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your response letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 19 2013

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON

WILLIAM D. BALFOUR, JR.
KAMANA BEAMER
LORETTA J. FUDDY, A.C.S.W., M.P.H.
MILTON D. PAVAO
JONATHAN STARR
TED YAMAMURA

WILLIAM M. TAM
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

November 15, 2013

REF: RFD.3862.6

Munekiyo & Hiraga, Inc.
Attention: Tessa Munekiyo Ng, AICP, Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ng:

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii

DWS Job No.: 12-03
TMK NO.: (2) 3-5-001:067 (por.) and 091 (por.)

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://www.hawaii.gov/dlnr/cwrm.

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☐ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/.

☐ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☐ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/info_permits.htm.

☒ 8. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 9. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.

☐ 10. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 11. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 12. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 13. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.

☐ 14. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 15. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 16. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☒ OTHER:
On March 31, 2009, the County of Maui Department of Water Supply (Maui DWS) submitted a Surface Water Use Permit Application for Existing Use in the Na Wai Eha, Maui, Surface Water Management Areas, requesting an amount of 1.784 million gallons per day (mgd). An accompanying Surface Water Use Permit Application for Proposed New Use was also submitted, requesting an additional amount of 1.416 mgd. At this time, the Commission on Water Resource Management is still in the process of determining instream flow standards for the Na Wai Eha Surface Water Management Areas, and no decisions have been made on the allocated use of surface water for Maui DWS. Please be aware that any expanded use of water by the Iao Water Treatment Plant will be subject to surface water use permit allocations once they are decided.

If there are any questions, please contact Dean Uyeno at (808) 587-0249.

Sincerely,

WILLIAM M. TAM
Deputy Director

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Mr. William M. Tam, Deputy Director
Department of Land and Natural Resources
Commission on Water Resource Management
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.); REF: RFD.3862.6

Dear Mr. Tam:

Thank you for your letter, dated November 15, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

The County of Maui DWS acknowledges your comments noting that the proposed project will require a Commission on Water Resource Management (CWRM) Water Use Permit and that the Surface Water Use Permit Application (submitted March 31, 2009) for Existing Use in the Na Wai Eha, Maui surface Water Management Areas will be subject to the April 2014 Settlement Agreement in the Na Wai Eha contested case.

As the project moves further along to better define the project details, DWS will apply for a Water Use Permit with the CWRM and secure any other applicable approvals.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 21 2013

NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

IN REPLY REFER TO:
STP 8.1367

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

November 15, 2013

Ms. Tessa Munekiyo Ng, AICP
Senior Associate
Munekiyo and Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ng:

Subject: Iao Water Treatment Plant (WTP) Upgrades
Early Consultation for Draft Environmental Assessment (DEA)
TMK: (2) 3-5-001:067 (por.) and 091(por.)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project. DOT understands the Maui County Department of Water Supply (DWS) proposes to replace the existing WTP with a new WTP.

Given the project location and the nature of the project it is not expected to significantly impact the State highway facility. However, the DWS is required to obtain a permit from DOT Highways Division, Maui District Office, for the transport of oversized and/or overweight materials and equipment on State highway facilities.

DOT appreciates the opportunity to provide comments. If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7977.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Ford Fuchigami, Interim Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.); STP 8.1367

Dear Mr. Fuchigami:

Thank you for your department's letter, dated November 15, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your department's letter.

The County of Maui, DWS acknowledges that the project is not expected to significantly impact State highway facilities. Construction of the project will comply with State highway oversize and/or overweight vehicle regulations. DWS recognizes that the project site needs to be accessed via State highway facilities and will include language in the construction bid documents directing the contractor and its subcontractors and material suppliers to comply with obtaining the necessary permits from your Maui District office.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your department's comment letter in the Draft EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 21 2013

NEIL ABERCROMBIE
GOVERNOR

DARRYLL D. M. WONG
MAJOR GENERAL
ADJUTANT GENERAL

JOSEPH K. KIM
BRIGADIER GENERAL
DEPUTY ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

NOV 19 2013

Ms. Tessa Munekiyo Ng, AICP
Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Subject: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii, DWS Job No. 12-03; TMK (2) 3-5-001: 67 (por.) and 091 (por.)

Dear Ms. Munekiyo Ng:

Thank you for the opportunity to comment on the above project. The State of Hawaii Department of Defense has no early consultation comments to offer relative to the project at this time, and defers to the appropriate State and federal agencies as to the protection of any cultural, historical, and environmental considerations for the proposed project.

Please contact this office upon completion of the Draft Environment Assessment. Should you have any questions or concerns, please have your staff contact Mr. Lloyd Maki, our Acting Chief Engineering Officer, on Oahu at (808) 733-4250.

Sincerely,

for Darryll D.M. Wong
Major General
Hawaii National Guard
Adjutant General

c: Mr. Ian Duncan, State Civil Defense

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Major General Darryll D.M. Wong
Hawaii National Guard
Adjutant General
Department of Defense
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Major General Wong:

Thank you for your letter, dated November 19, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) acknowledges that the State of Hawaii Department of Defense has no comments to offer at this time.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.

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MAUI
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NOV 18 2013

OFFICE OF PLANNING
STATE OF HAWAII

NEIL ABERCROMBIE
GOVERNOR

JESSE K. SOUKI
DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http:/planning.hawaii.gov/

Ref. No. P-14173

November 14, 2013

Ms. Tessa Munekiyo Ng, AICP
Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo Ng:

Subject: Early Consultation Request for the Proposed Iao Water Treatment Plant Upgrades; Wailuku, Maui; TMK: (2) 3-5-001:067 (por.) and 091 (por.)

Thank you for the opportunity to provide comments on the Iao Water Treatment Plant Upgrades project.

We have reviewed the documents you submitted to us by letter dated October 25, 2013, and have the following comments to offer.

1. The entire state is defined to be within the Coastal Zone Management Area, see HRS §205A-1 (definition of "coastal zone management area"). The Draft Environmental Assessment (Draft EA) should include a discussion of the proposed project's ability to meet the objectives and policies set forth in HRS §205A-2.

2. The construction project may have nonpoint pollution impacts on coastal waters. Please review the Hawaii Watershed Guidance, which provides a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impact. Specifically, please examine the sections on: "Hawaii's Management Measures, Urban Areas," on page 109. The *Watershed Guidance* can be viewed or downloaded from the Office of Planning website at http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HIWatershedGuidance Final.pdf.

3. The Draft EA should include the Coastal Zone Management Act, HRS Chapter 205A, in the list of "Relationship to Land Use Plans, Policies, and Controls."

If you have any questions regarding this comment letter, please contact Josh Hekekiá of our Hawaii CZM Program at (808) 587-2845.

Sincerely,

Jesse K. Souki
Director

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Leo R. Asuncion, Jr., AICP, Acting Director
Office of Planning
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.); Ref. No. P-14173

Dear Mr. Asuncion:

Thank you for your department's letter, dated November 14, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your department's letter.

The County of Maui DWS acknowledges that Coastal Zone Management Area rules as prescribed in HRS 205A-1 applies to the proposed project. Accordingly, the Draft Environmental Assessment (Draft EA) will be prepared to include discussions on the proposed project's ability to meet the objectives and policies set forth.

Regarding the concern of construction activities having nonpoint source (NPS) pollution impacts on coastal waters, we note that strict erosion control measures and best management practices will be implemented during the construction phase. In the Hawai'i Watershed Guidance document, one of the 12 management measures that apply to urban areas is Site Development Management Measures. The DWS will coordinate with Department of Health, Clean Water Branch and comply with applicable National Pollutant Discharge Elimination System (NPDES) permit requirements. These

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
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pollution abatement measures will protect watersheds located downstream of the project site that contain wetlands and riparian areas.

Finally, the Draft EA will be prepared to include the Coastal Zone Management Act, HRS, Chapter 205A in the list of "Relationship to Land Use Plans, Policies, and Controls."

We appreciate your input and will include a copy of your department's comment letter in the Draft EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 18 2013

ALAN M. ARAKAWA
MAYOR

JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE AND PUBLIC SAFETY
FIRE PREVENTION BUREAU

313 MANEA PLACE . WAILUKU, HAWAII 96793
(808) 244-9161 . FAX (808) 244-1363

November 14, 2013

Munekiyo & Hiraga, Inc
Attention: Tessa Munekiyo Ng, AICP, Senior Associate
305 High St. Suite 104
Wailuku, HI 96793

Re: Proposed Iao Water Treatment Plant Upgrades
Wailuku, Maui, Hawaii
(2) 3-5-001: 067 (por.) & 091 (por.)
DWS Job No. 12-03

Dear Tessa:

Thank you for allowing our office the opportunity to comment on this subject. At this time, our office provides the following comments:

- Our office reserves the right to comment on the construction of any buildings during the building permit process when water supply for fire protection, fire apparatus access, and fire protection and life safety system requirements will be addressed.
- Permits for flammable & combustible liquid storage tanks are processed and approved at the Fire Prevention Bureau. A site plan indicating the tank location and distances to property lines and buildings will be required.

If there are any questions or comments, please feel free to contact me at 244-9161 ext. 23.

Sincerely,

Paul Haake
Captain, Fire Prevention Bureau

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Paul Haake, Captain
Department of Fire and Public Safety
County of Maui
313 Manea Place
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Captain Haake:

Thank you for your letter dated November 14, 2013 providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

1. We acknowledge that your office reserves the right to comment on the project during the building permit process.

2. Any permits for flammable and combustible liquid storage tanks will be appropriately processed with your office and include a site plan indicating tank location, distances to property lines and buildings.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and we will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor
JO-ANN T. RIDAO
Director
JAN SHISHIDO
Deputy Director

35 LUNALILO STREET, SUITE 102 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7351 • FAX (808) 270-6284

November 12, 2013

Ms. Tessa Munekiyo Ng, AICP
Senior Associate
Munekiyo & Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ng:

Subject: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

The Department has reviewed the request for Early Consultation for the above subject project. Based on our review, we have determined that the subject project is not subject to Chapter 2.96, Maui County Code. At the present time, the Department has no additional comments to offer.

Please call Mr. Veranio Tongson Jr. of our Housing Division at (808) 270-1741 if you have any questions.

Sincerely,

Wayde T. Oshiro

WAYDE T. OSHIRO
Housing Administrator

cc: Director of Housing and Human Concerns

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Wayde T. Oshiro, Administrator
Department of Housing and Human Concerns
County of Maui
35 Lunalilo Street, Suite 102
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Mr. Oshiro:

Thank you for your letter, dated November 1, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

The County of Maui DWS acknowledges that the project is not subject to Chapter 2.96, Maui County Code relating to the County's residential work force housing policy.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Manager

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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ALAN M. ARAKAWA
Mayor

NOV 06 2013

GLENN T. CORREA
Director

BRIANNE SAVAGE
Deputy Director

(808) 270-7230
FAX (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

November 1, 2013

Tessa Munekiyo Ng, AICP, Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii; DWS Job No. 12-03; TMK: (2) 3-5-001:067 (por.) and 091 (por.)

Dear Ms. Ng:

We are in receipt of your October 25, 2013 request for early review and comment on the proposed project and have no comment at this time. Please keep our Department informed as the project progresses.

Should you have any questions or need of additional information, please contact me or Robert Halvorson at 808.870.5942 or robert.halvorson@co.maui.hi.us

Sincerely,

GLENN T. CORREA
Director

c: Robert Halvorson, Planning & Development

GTC:RH:do

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICK" HIRANO
SENIOR ADVISOR

January 29, 2015

Brianne Savage, Interim Director
County of Maui
Department of Parks & Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Ms. Savage:

Thank you for your letter, dated November 1, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) acknowledges your Department has no comments to offer on the proposed project at this time.

We appreciate your input and will include a copy of your department's response letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN::mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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MAUI
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OAHU
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ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

NOV 12 2013

COUNTY OF MAUI

DEPARTMENT OF PLANNING

November 12, 2013

Ms. Tessa Munekiyo Ng
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ng:

SUBJECT: EARLY CONSULTATION COMMENTS FOR PROPOSED UPGRADES TO THE IAO WATER TREATMENT PLANT, LOCATED ALONG ALU ROAD IN WAILUKU, ISLAND OF MAUI, HAWAII; TMK: (2) 3-5-001: 091 (RFC 2013/0154)

The Department of Planning (Department) is in receipt of the above-referenced request for early consultation comments on the above-referenced project. The Department understands the proposed action includes the following:

- The Applicant is the County of Maui, Department of Water Supply (DWS);
- The project will involve upgrades to the Iao Water Treatment Plant. Upgrades include, but are not limited to, the installation of new membrane filtration units, various tanks, dual sludge lagoons, holding tanks, waterlines, drainage system, and construction of a Treatment Plant Building;
- The property is currently owned by RCFC Kehalani LLC, Kehalani Mauka LLC, and Wailuku Water Company LLC. The DWS is in the process of acquiring the land for the proposed project; and
- The project triggers compliance with Hawaii Revised Statutes (HRS), Chapter 343;

Based on the foregoing, the Department provides the following comments on the Draft Environmental Assessment (EA):

1. Please include a Zoning and Flood confirmation form from the Department's Zoning Administration and Enforcement Division;
2. That the Applicant include information on all permits required in order to complete the project; and
3. Please provide the Department with one (1) hard copy and one (1) electronic copy of the Draft EA.

ONE MAIN PLAZA BUILDING / 2200 MAIN STREET, SUITE 315 / WAILUKU, MAUI, HAWAII 96793
MAIN LINE (808) 270-7735 / FACSIMILE (808) 270-7634
CURRENT DIVISION (808) 270-8205 / LONG RANGE DIVISION (808) 270-7214 / ZONING DIVISION (808) 270-7253

Thank you for the opportunity to comment. Should you require further clarification, please contact Staff Planner Danny Dias at danny.dias@mauicounty.gov or at (808) 270-7557.

Sincerely,

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

for WILLIAM SPENCE
Planning Director

xc: John S. Rapacz, Planning Program Administrator (PDF)
Danny A. Dias, Staff Planner (PDF)
Project File
General File

WRS:CIY:DD:aj
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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

William Spence, Director
Department of Planning
County of Maui
2200 Main Street, Suite 315
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Mr. Spence:

Thank you for your letter, dated November 12, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your letter.

The County of Maui DWS acknowledges your comment advising that certain information be included in the Draft Environmental Assessment (EA).

DWS will include the following information in the Draft EA:

1. Zoning and Flood confirmation from the Planning Department's Zoning Administration and Enforcement Division and;

2. Information on all permits required to complete the proposed project.

Also, DWS will provide the Department with one (1) hard copy and one (1) electronic copy of the Draft EA.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 18 2013

POLICE DEPARTMENT
COUNTY OF MAUI

ALAN M. ARAKAWA
MAYOR

OUR REFERENCE

YOUR REFERENCE

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

GARY A. YABUTA
CHIEF OF POLICE

CLAYTON N.Y.W. TOM
DEPUTY CHIEF OF POLICE

November 13, 2013

Ms. Tessa Munekiyo Ng
AICP, Senior Associate
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Munekiyo Ng:

SUBJECT: Early Consultation Request for the Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui
DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

This is in response your request for comments on the above subject.

We have reviewed the information submitted for this project and have submitted our comments and/or recommendations. Thank you for giving us the opportunity to comment on this project.

Very truly yours,

Assistant Chief Victor Ramos
for: Gary A. Yabuta
Chief of Police

c: William Spence, Planning Department

TO	:	GARY YABUTA, CHIEF OF POLICE, COUNTY OF MAUI
VIA	:	CHANNELS
FROM	:	AYLETT WALLWORK, POLICE OFFICER III, COMMUNITY POLICING, WAILUKU PATROL DIVISION
SUBJECT	:	RESPONSE TO A REQUEST FOR COMMENTS REGARDING IAO WATER TREATMENT PLANT UPGRADES

This communication is submitted as a response to a request for comments by the Maui County, Department of Water Supply, who is proposing to replace the existing Iao Surface Water Treatment Plant with a new Water Treatment Plant.

PROJECT	:	PROPOSED IAO WATER TREATMENT PLANT UPGRADES
LOCATION	:	AREA OF KEHALANI DEVELOPMENT WAILUKU, MAUI, HAWAII
TMK	:	(2) 3 – 5 – 001:067

RESPONSE:

In review of the submitted documents, the concern from the police perspective is the impacts upon vehicular and pedestrian movement as well as the public's safety. Maui County Department of Water Supply is proposing to replace the existing Iao Water Treatment Plant with a new Water Treatment Plant (WTP), west of the existing plant. Construction should not have any impact to vehicular and pedestrian movements or the public's safety. There is adequate on-site parking for workers and their vehicles. The proposed site is not in an area that can be accessed by the roadway, but can be accessed through the existing Iao WTP site. At this time it is undetermined when this project will commence.

There are no objections to the progression of this project. It must be stated that all those involved in this project must remain cognizant in maintaining the safety of the general public.

Respectfully submitted for your review and approval.

11764

Aylett Wallwork e#11764
P.O. III, Community Policing, Wailuku Patrol Division
11/07/2013 @ 1000 hours

NOTED: A/CAPT. 11/8/13

NO CONCERNS AT THIS TIME.
SGT. 11076
11-7-13 @ 1505

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Tivoli Faaumu, Chief
Police Department
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Chief Faaumu:

Thank you for your Department's letter, dated November 13, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) offers the following information in response to the comments noted in your department's letter.

The County of Maui DWS acknowledges your department's comment that the construction phase of the project should not have any impact to vehicular and pedestrian movements or the public's safety and that adequate on-site parking for workers and their vehicles are accommodated. DWS will include provisions in the construction bid documents to ensure the general contractor implements adequate work zone traffic control plans and has adequate on-site construction vehicle parking areas.

We note that access to the proposed site will be via an access driveway off of Alu Road rather than through the existing water treatment plant site.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your department's comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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NOV 13 2013

ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

GLEN A. UENO, P.E., P.L.S.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS

200 SOUTH HIGH STREET, ROOM NO. 434, WAILUKU, MAUI, HAWAII 96793
Telephone: (808) 270-7845 • Fax: (808) 270-7955

November 7, 2013

Ms. Tessa Munekiyo Ng, AICP
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Ms. Munekiyo Ng:

SUBJECT: EARLY CONSULTATION REQUEST FOR THE PROPOSED IAO WATER TREATMENT PLANT UPGRADES; DWS JOB NO. 12-03; TMK: (2) 3-5-001:067 (POR.) and 091 (POR.)

We have no comments at this time, but wish to reserve our comments until the review of the Draft Environmental Assessment.

Please call Rowena M. Dagdag-Andaya at 270-7845 if you have any questions regarding this letter.

Sincerely,

DAVID C. GOODE
Director of Public Works

DCG:RMDA:ls
xc: Highways Division
Engineering Division
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MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

GWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

David C. Goode, Director
Department of Public Works
County of Maui
200 South High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Mr. Goode:

Thank you for your letter, dated November 7, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) acknowledges your Department has no comments to offer on the proposed project at this time.

We appreciate your input and we will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

NOV 18 2013

ALAN M. ARAKAWA
Mayor

KYLE K. GINOZA, P.E.
Director

MICHAEL M. MIYAMOTO
Deputy Director

TRACY TAKAMINE, P.E.
Solid Waste Division

ERIC NAKAGAWA, P.E.
Wastewater Reclamation Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2200 MAIN STREET, SUITE 100
WAILUKU, MAUI, HAWAII 96793

November 13, 2013

Ms. Tessa Munekiyo Ng
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ng:

SUBJECT: **IAO WATER TREATEMENT PLANT UPGRADES**
EARLY CONSULTATION
TMK (2) 3-5-001:067 (POR.) AND 091 (POR.), WAILUKU

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:

   a. None.

2. Wastewater Reclamation Division (WWRD) comments:

   a. None.

If you have any questions regarding this memorandum, please contact Michael Miyamoto at 270-8230.

Sincerely,

KYLE K. GINOZA, P.E.
Director of Environmental Management

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICK" HIRANO
SENIOR ADVISOR

January 29, 2015

Kyle K. Ginoza, P.E.
Department of Environmental Management
County of Maui
2200 South High Street, Suite 100
Wailuku, Hawaii 96793

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Mr. Ginoza:

Thank you for your letter, dated November 13, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) acknowledges your Department has no comments to offer on the proposed project at this time.

We appreciate your input and will include a copy of your response letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

ALAN M. ARAKAWA
Mayor

NOV 12 2013

JO ANNE JOHNSON-WINER
Director
MARC I. TAKAMORI
Deputy Director
Telephone (808) 270-7511

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

October 30, 2013

Ms. Tessa Munekiyo Ng
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Subject: Proposed Iao Water Treatment Plant Upgrades

Dear Ms. Ng,

Thank you for the opportunity to comment on this project. We have no comments to make at this time.

Please feel free to contact me if you have any questions.

Sincerely,

Jo Anne J. Winer

Jo Anne Johnson Winer
Director

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MICH" HIRANO
SENIOR ADVISOR

January 29, 2015

Jo Anne Johnson Winer, Director
Department of Transportation
County of Maui
200 South High Street
Wailuku, Hawaii 96793-2155

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Ms. Johnson Winer:

Thank you for your letter, dated October 30, 2013, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. The County of Maui, Department of Water Supply (DWS) acknowledges your Department has no comments to offer on the proposed project at this time.

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:mge
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakastuka, Austin, Tsutsumi & Associates, Inc.
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MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

JUN 16 2014

Maui Electric Company, Ltd.•210 West Kamehameha Avenue•P. O. Box 398•Kahului, Maui, HI 96733-0698•(808) 871-8461

June 11, 2014

Munekiyo & Hiraga, Inc
Attention: Ms. Tessa Munekiyo Ng, Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

Subject: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades
Tax Map Key: (2) 3-5-001:067 (por.) and 091 (por.)
Wailuku, Maui, Hawaii

Dear Ms. Munekiyo Ng,

Thank you for allowing us to comment on the Early Consultation Request for the subject project.

In reviewing our records and the information received, Maui Electric Company (MECO) would highly encourage the customer's electrical consultant to submit electrical drawings to us as soon as practical to address and coordinate any possible relocations of our facilities. Since this project's anticipated electrical demand may have a substantial impact to our system, we encourage the customer's electrical consultant to submit the electrical demand requirements and project time schedule as soon as practical so that service can be provided on a timely basis. MECO may need to complete system upgrades to accommodate the anticipated electrical load.

Should you have any questions or concerns, please contact Kelcie Kawamura at 872-3246.

Sincerely,

Ray Okazaki
Supervisor, Engineering

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
PRESIDENT

KARLYNN FUKUDA
EXECUTIVE VICE PRESIDENT

MARK ALEXANDER ROY
VICE PRESIDENT

TESSA MUNEKIYO NG
VICE PRESIDENT

EWEN OHASHI HIRAGA
SENIOR ADVISOR

MITSURU "MIGH" HIRANO
SENIOR ADVISOR

January 29, 2015

Ray Okazaki, Supervisor, Engineering
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733-0698

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Island of Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.)

Dear Mr. Okazaki:

Thank you for your letter dated June 11, 2014, providing early consultation comments on the proposed Iao Water Treatment Plant Upgrades. On behalf of the County of Maui, Department of Water Supply (DWS) we offer the following information in response to the comments noted in your letter.

The County of Maui, DWS and its electrical consultant will submit to MECO, the proposed upgraded facilities electrical demand requirements and project time schedule details as soon as available.

MAUI
305 High St., Suite 104 Wailuku, Hawaii 96793
ph: (808)244-2015 fax: (808)244-8729
OAHU
735 Bishop St., Suite 238 Honolulu, Hawaii 96813 | ph: (808)983-1233
WWW.MHPLANNING.COM

We appreciate your input and will include a copy of your comment letter in the Draft Environmental Assessment. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Manager

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakatsuka, Austin Tsutsumi & Associates, Inc.
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IX. PARTIES CONSULTED DURING THE 30-DAY COMMENT PERIOD FOR THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

IX. PARTIES CONSULTED DURING THE 30-DAY COMMENT PERIOD FOR THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following list of agencies, organizations, and individuals were consulted during the 30-day comment period for the Draft Environmental Assessment (EA) that was filed and published in the Office of Environmental Quality Control's The Environmental Notice on March 23, 2015. The 30-day public comment period for the Draft EA ended on April 22, 2015. The following agencies, organizations, and individuals were provided with a copy of the Draft EA for review and comment. This chapter includes comments received during the 30-day public comment period, along with responses to substantive comments.

FEDERAL AGENCIES

1. Larry Yamamoto, State Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850-0001

2. Ranae Ganske-Cerizo, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
77 Hookele Street, Suite 202
Kahului, Hawaii 96732

3. Shelly Lynch, Chief, Regulatory Branch
U.S. Department of the Army
U.S. Army Engineer District, Honolulu
Regulatory Branch, Building 230
Fort Shafter, Hawaii 96858-5440

4. Wayne Nastri, Regional Administrator
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

5. Dave Wesley, Deputy Regional Director
U. S. Fish and Wildlife Service
Pacific Region
911 NE 11th Avenue
Portland, Oregon 97232

6. Loyal A. Mehrhoff, Field Supervisor
U. S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm. 3-122
Box 50088
Honolulu, Hawaii 96813

STATE AGENCIES

7. Douglas G. Murdock, Comptroller
Department of Accounting and General Services
1151 Punchbowl Street, #426
Honolulu, Hawaii 96813

8. Scott Enright, Chair
Department of Agriculture
1428 South King Street
Honolulu, Hawaii 96814-2512

9. Luis P. Salaveria, Director
State of Hawaii
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

10. Dr. Virginia Pressler
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814

11. Alec Wong, P.E., Chief
Clean Water Branch
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814

12. Patti Kitkowski, District Environmental Health Program Chief
State of Hawaii
Department of Health
Maui Sanitation Branch
54 South High Street, Room 300
Wailuku, Hawaii 96793

13. Laura McIntyre, AICP, Office Manager
Environmental Planning Office
Department of Health
919 Ala Moana Blvd., Suite 312
Honolulu, Hawaii 96814

14. Lene Ichinotsubo
Environmental Management Division
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 212
Honolulu, Hawaii 96814

15. Carty S. Chang, Interim Chairperson
State of Hawaii
Department of Land and Natural Resources - Planning
P. O. Box 621
Honolulu, Hawaii 96809

16. Alan Downer, Administrator
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707

17. Morgan Davis
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
130 Mahalani Street
Wailuku, Hawaii 96793

18. Ford Fuchigami, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

19. Col. Arthur "Joe" Logan
Adjutant General and Director
Hawaii State Civil Defense
3949 Diamond Head Road
Honolulu, Hawaii 96813-4495

20. Jobie Masagatani, Chair
Hawaiian Home Lands Commission
P.O. Box 1879
Honolulu, Hawaii 96805

21. Jessica Wooley, Director
Office of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, Hawaii 96813

22. Dr. Kamana`opono Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
560 N. Nimitz Highway, Suite 200
Honolulu, Hawaii 96817

23. Leo R. Asuncion, Jr., AICP, Acting Director
State of Hawaii
Office of Planning
P. O. Box 2359
Honolulu, Hawaii 96804

24. Senator Gil Keith-Agaran
Hawaii State Senate
Hawaii State Capitol, Room 221
415 S. Beretania Street
Honolulu, Hawaii 96813

25. Representative Lynn DeCoite
House of Representatives
Hawaii State Capitol, Room 405
415 S. Beretania Street
Honolulu, Hawaii 96813

26. Representative Joseph Souki
House of Representatives
Hawaii State Capitol, Room 431
415 S. Beretania Street
Honolulu, Hawaii 96813

COUNTY AGENCIES

27. Alan Arakawa, Mayor
County of Maui
200 South High Street
Wailuku, Hawaii 96793

28. Teena Rasmussen, Coordinator
County of Maui
Office of Economic Development
2200 Main Street, Suite 305
Wailuku, Hawaii 96793

29. Anna Foust, Management Officer
Maui Civil Defense Agency
200 South High Street
Wailuku, Hawaii 96793

30. Jeffrey A. Murray, Fire Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawaii 96732

31. Jo-Ann Ridao, Director
County of Maui
Department of Housing and Human Concerns
One Main Plaza
2200 Main Street, Suite 546
Wailuku, Hawaii 96793

32. Ka'ala Buenconsuelo, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2
Wailuku, Hawaii 96793

33. William Spence, Director
County of Maui
Department of Planning
2200 Main Street, Suite 315
Wailuku, Hawaii 96793

34. John Rapacz, Administrator
Department of Planning
Zoning Administration and Enforcement Division
County of Maui
2200 Main Street, Suite 335
Wailuku, Hawaii 96793

35. Tivoli Faaamo, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

36. David Goode, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Hawaii 96793

37. Kyle Ginoza, Director
County of Maui
Department of Environmental Management
2050 Main Street, Suite 1C
Wailuku, Hawaii 96793

38. Jo Anne Johnson Winer, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793

39. Council Chair Michael White
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

40. Councilmember Mike Victorino
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

UTILITIES

41. Mathew McNeff
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733

42. Hawaiian Telcom
60 South Church Street
Wailuku, Hawaii 96793

COMMUNITY ORGANIZATIONS

43. Wailuku Community Association
40 Hoauna Street
Wailuku, Hawaii 96793

44. Rick Papa, President
Attention: Tiana Raymondo
Kehalani Association
P.O. Box 1530
Wailuku, Hawaii 96793

45. RCFC Kehalani LLC
c/o Brian Ige
2005 East Main Street
Wailuku, Hawaii 96793

Charlene Shibuya

From: Paahana, Jessie K POH <Jessie.K.Paahana@usace.army.mil>
Sent: Thursday, March 26, 2015 12:04 PM
To: Tessa Munekiyo Ng; thomas.ochwat@co.maui.hi.us; paul.fasi@co.maui.hi.us
Subject: ADDITIONAL INFORMATION REQUEST for POH-2013-00209 Iao Water Treatment Plant Upgrades at TMK 235001067, Wailuku, Island of Maui, Hawaii (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Aloha, Ms. Ng:

The Honolulu District U.S. Army Corps of Engineers (Corps) has received your letter dated March 13, 2015 transmitting a copy of the Draft Environmental Assessment for Phase 2 of the subject project. By letter dated April 16, 2014, the Corps informed you your project had been assigned Department of the Army file number POH-2013-00209. Please continue to reference this number in all future correspondence concerning this project.

Please submit to this office a request for a Jurisdictional Determination to determine whether there are waters of the U.S. under the regulatory jurisdiction of the Corps present at the project site. As directed in the April 2014 letter, you should submit to our office a wetland delineation report so we may review the findings of that report.

You may send your request via email directly to the Corps Regulatory Office central account at CEPOH-RO@usace.army.mil.

Mahalo,
Jessie

Jessie K Paahana, Biologist
Honolulu District, US Army Corps of Engineers Regulatory Office Building 230 Fort Shafter, Hawaii 96858-5440
ph: 808.835.4107

For more information regarding the Regulatory Program at the Honolulu District, please visit our website at http://www.poh.usace.army.mil/Missions/Regulatory.aspx. Please direct all general inquiries to the Regulatory Office central email account at CEPOH-RO@usace.army.mil or via phone at (808) 835-4303.

You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Classification: UNCLASSIFIED
Caveats: NONE

APR 21 2014

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

April 16, 2014

Regulatory Office

File No. POH-2013-0209

Tessa Munekiyo Ng
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo Ng:

The U.S. Army Corps of Engineers (Corps) has evaluated the early consultation information submitted on October 25, 2013, for the replacement of the existing Iao Surface Water Treatment Plant on South Alu Road. The project site is located within TMK #235001067; Latitude 20.883110° N., Longitude 156.512693° W.; city of Wailuku, Island of Maui, Hawaii. Your project has been assigned number POA-2013-0209, which should be referred to in all correspondence with us.

Based on our review of the information you provided we are not able to determine if the subject project area contains waters of the U.S., and/or wetlands, under the Corps' regulatory jurisdiction. We encourage you to provide the Corps with a wetland delineation based on the guidelines presented in the Corps of Engineers Wetlands Delineation Manual dated January 1987 and the Regional Supplement for Hawaii and Pacific Island Regions dated February 2012.

The Corps' regulatory authorities are based on two laws: Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403), which prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from the Corps; and Section 404 of the Clean Water Act (CWA), which prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a Corps' permit. Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include "muskegs", swamps, marshes, bogs, and similar areas.

You may contact Linda Speerstra via email at linda.speerstra@usace.army.mil, by mail at the address above, or by phone at (808) 835-4300 if you have questions. We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey form. This form is available at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Office

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
PRESIDENT
Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

VIA EMAIL: CEPOH-RO@usace.army.mil
Jessie K. Paahana, Biologist
Honolulu District
U.S. Army Corps of Engineers
Regulatory Office Building
230 Fort Shafter
Honolulu, Hawaii 96858-5440

SUBJECT: Draft Environmental Assessment (EA 2015/0001) and Project District Phase II Application (PH2 2015-0001) for Proposed Iao Water Treatment Plant (WTP) Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.) Wailuku, Maui, Hawaii (POH-2013-00209)

Dear Ms. Paahana:

Thank you for your email dated March 26, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. On behalf of the County of Maui Department of Water Supply (DWS), we provide the following information in response to your letter.

There are no streams or wetlands within the project site. The nearest stream is Iao Stream located approximately 500 feet north of the project site. Waihee Ditch, an irrigation canal built in the early 1900s, is located approximately 600 feet east of the project site. The ditch flows in a southeast direction to Maalaea Harbor. The Hopoi Chute, which connects to the Waihee Ditch south of the Iao WTP, conveys a majority of the water to the Waiale Reservoir. The ditch water is used for sugar cane irrigation. The project does not involve work within Waihee Ditch. It is noted that decanted water from the sludge lagoons at the proposed WTP will be conveyed by a 12-inch decant line to an existing storm drain manhole at the Iao Tank site, from where the decant line will be conveyed to the Waihee Ditch via an existing drainline. A National Pollutant Discharge Elimination System (NPDES) Permit will be required for this discharge.

The closest wetland is the Kanaha Pond Wildlife Sanctuary located approximately 3.5 miles northwest of the project site. As discussed by telephone on May 20, 2015 with Charlene Shibuya from our office, due to the distance between the project site and the nearest wetland, a wetlands delineation is not anticipated to be necessary.

Pursuant to your guidance, we would like to request a jurisdictional determination from your office to confirm whether there are waters of the U.S. under the regulatory jurisdiction of the Corps present at the project site.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

In Reply Refer To:
01EPIF00-2015-TA-0165

MAR 16 2015

Ms. Tessa Munekiyo Ng
Munekiyo Hiraga, Inc.
735 Bishop Street, Suite 238
Honolulu, Hawaii 96813

Subject: Technical Assistance for the Proposed Iao Water Treatment Plant Upgrades Project, Maui

Dear Ms. Ng:

The U.S. Fish and Wildlife Service (Service) received your correspondence on February 18, 2015, letter requesting comment on proposed upgrades to the Iao Surface Water Treatment Plant located on South Alu Road in Wailuku [TMK (2) 3-5-001:067]. We previously provided comment on this project in a letter dated November 27, 2013 (Service File # 2014-TA-0037). The proposed project site is to be located west of the existing Maui County Department Water Supply facility.

You responded in your February 18, 2015, letter to our recommended avoidance and minimization measures that the Department of Water Supply (DWS) will minimize outdoor lighting and implement other mitigation actions such as bulb shielding and installing motion sensors and timers to minimize impacts to Hawaiian petrel (*Pterodroma sandwichensis*) and Newell's shearwater (*Puffinus auricularis newelli*) and restrict clearing and grubbing activities from June 1 to September 15 during the Hawaiian Hawaiian hoary bat (*Lasiurus cinereus semotus*) breeding season, but due to public health concerns and the need to secure the water treatment facility, barbed wire will be used in fencing for the project. In a February 27, 2015, e-mail and phone conversation with Fish and Wildlife Biologist, Jay Nelson, Ms. Charlene Shibuya of your staff described the proposed fencing as chain link and about 1,163 lineal feet, however with barbed wire as a component of the fence design.

Implementation of the above measures will minimize but does not ensure that take of listed species associated with this proposed action will be fully avoided. In particular, the use of barbed wire in perimeter fencing poses the risk of entanglement of Hawaiian hoary bats. Therefore, a consultation pursuant to section 7 of the ESA may be necessary and can be initiated by the federal agency serving as a nexus for this project. Alternatively, that federal agency can designate a non-federal representative to conduct an informal consultation on their behalf.

Thank you for your efforts to conserve listed species and native habitats. Please contact Fish and Wildlife Biologist Jay Nelson (808-792-9441) if you have any questions or for further guidance.

Sincerely,

Michelle Bogardus
Island Team Leader
Maui Nui and Hawaii Island

MUNEKIYO HIRAGA
Planning, Project Management, Sustainable Solutions

Michael T. Munekiyo
PRESIDENT
Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Michelle Bogardus
Island Team Leader - Maui Nui and Hawaii Island
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii (01EPIF00-2015-TA-0165)

Dear Ms. Bogardus:

Thank you for your letter received March 16, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. On behalf of the County of Maui Department of Water Supply (DWS), we acknowledge your concern that the use of barbed wire as a component of the perimeter chain link fence does pose a risk of entanglement of Hawaiian hoary bats and that a take of the listed species could potentially occur and consultation pursuant to Section 7 of the Endangered Species Act (ESA) may be necessary.

We note that the Proposed Iao Water Treatment Plant (WTP) will provide drinking water to nearby communities and provisions for a secure project area is critical to prevent tampering or other nefarious activities which may contaminate the drinking water supply and pose a public health hazard to the community. Therefore, for security reasons, the perimeter fence will need to have barbed wire similar to the existing fencing around all other WTPs.

Maui: 305 High Street, Suite 104 · Wailuku, Hawaii 96793 · Tel: 808.244.2015 · Fax: 808.244.8729
Oahu: 735 Bishop Street, Suite 321 · Honolulu, Hawaii 96813 · Tel: 808.983.1233
www.munekiyohiraga.com

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
Robert Hobdy
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APR 0 2 2015

DAVID Y. IGE
GOVERNOR

DOUGLAS MURDOCK
Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)1060.5

MAR 3 0 2015

Mr. David Taylor, P.E., Director
Attn: Tom Ochwat, P.E. – Engineering Division
Department of Water Supply
County of Maui
200 South High Street, 5th Floor
Wailuku, Hawaii 96793

Dear Mr. Taylor:

Subject: Draft Environmental Assessment for
Proposed Iao Water Treatment Plant Upgrades
Wailuku, Maui
TMK: (2) 3-5-001: Por 67 and Por 91

Thank you for the opportunity to comment on the subject project. The proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities and, we have no comments to offer at this time.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Planning Branch at 586-0584.

Sincerely,

JAMES K. KURATA
Public Works Administrator

GT:mo
c: Ms. Tessa Munekiyo Ng, Munekiyo & Hiraga

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
PRESIDENT
Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

James K. Kurata, Public Works Administrator
Department of Accounting and General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96810-0119

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Mr. Kurata:

Thank you for your letter dated March 30, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. The County of Maui Department of Water Supply (DWS) acknowledges that your Department has no comments to offer on the proposed project at this time. It has been determined that this project does not impact any of the Department of Accounting and General Services' projects or existing facilities.

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
www.munekiyohiraga.com

APR 06 2015

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
EMD/CWB

03035PJF.15

April 1, 2015

Ms. Tessa Munekiyo
Vice President
Munekiyo Hiraga
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Munekiyo:

**SUBJECT: Draft Environmental Assessment for proposed IAO water treatment plant upgrades
Wailuku, Island of Maui**

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated March 19, 2015, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee ($1,000 for an individual NPDES permit or $500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

   a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects

natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.

c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.

e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb/, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

Alec Wong

ALEC WONG, P.E., CHIEF
Clean Water Branch

JF:ay

Cc: Mr. David Taylor, County of Maui

MUNEKIYO HIRAGA
Planning. Project Management. Sustainable Solutions.

Michael T. Munekiyo
PRESIDENT
Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Alec Wong, P.E. Chief
Clean Water Branch
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii EMD/CWB 03035PJF.15

Dear Mr. Wong:

Thank you for your letter dated April 1, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. As recommended, the Department of Water Supply (DWS) will review the standard comments on your website and applicable comments will be incorporated into the Project. On behalf of the DWS we offer the following information, which addresses comments in the order listed in your letter.

1. We acknowledge that the project must meet the Department of Health (DOH) water quality requirements of Hawaii Administrative Rules (HAR), Chapter 11-54.

2. As may be required, a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the Department of Health for approval prior to the initiation of construction.

3. We acknowledge that work in, over, or under waters of the United States may require additional permitting from the Army Corps of Engineers (ACE), Regulatory Branch. The Draft EA was transmitted to the ACE for review and comment. As may be needed, DWS will coordinate with the ACE regarding applicable permitting requirements.

Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
www.munekiyohiraga.com

4. We acknowledge the project must comply with the State's Water Quality Standards and non-compliance may be subject to penalties of $25,000.00 per day per violation.

5. We acknowledge the State's position that all projects must protect and utilize sustainable practices concerning water quality and beneficial uses of State waters. Project planning methods and strategies outlined and as applicable to the Project, will be implemented.

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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APR 15 2015

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793-3378

April 13, 2015

Mr. David Taylor, P.E., Director
Attention Tom Ochwat
Department of Water Supply
200 South High Street, 5th Floor
Wailuku, Hawai`i 96793

Mr. William R. Spence, Director
Attention Paul Fasi
Department of Planning
One Main Plaza Building
2200 Main Street, Suite 315
Wailuku, Hawai`i 96793

Ms. Tessa Munekiyo Ng, Vice President
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Mr. Taylor, Mr. Spence and Ms. Munekiyo Ng:

Subject:	**Iao Water Treatment Plant Upgrades**
Applicant:	**County of Maui, Department of Water Supply (DWS)**
Permit No.:	**EA 2015/0001, PH2 2015/0001**
TMK:	**(2) 3-5-001:067 (por.) and 091 (por.)**
Project Location:	**West Alu Road about 800 feet west of Iao Valley Road intersection**
Project Description:	**Replace existing water treatment plant (WTP) with a new WTP adjacent to the existing site of DWS' 3.0 million gallon Iao Tank**

Thank you for the opportunity to review this project. We have the following comments to offer:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage may be required for this project. The Clean Water Branch should be contacted at 808 586-4309.

2. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46, "Community Noise Control." A noise permit may be required and should be obtained before the commencement of work. Please call the Indoor & Radiological Health Branch at 808 586-4700.

It is strongly recommended that the Standard Comments found at the Department's website: http://health.hawaii.gov/epo/home/landuse-planning-review-program/ be reviewed and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please contact me at 808 984-8230.

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c EPO

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Michael T. Munekiyo
PRESIDENT
Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Patti Kitkowski
District Environmental Health Program Chief
Maui District Office
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment (EA 2015/0001) and Project District Phase II Application (PH2 2015-0001) for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Ms. Kitkowski:

Thank you for your letter dated April 13, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document and Project District Phase II Application. On behalf of the County of Maui Department of Water Supply (DWS), we offer the following information to address comments in the order listed in your letter.

1. As may be required, a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the Department of Health – Clean Water Branch.

2. As may be required, in compliance with Chapter 11-46 "Community Noise Control", a noise permit will be obtained prior to the commencement of work.

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes (HRS) review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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MAR 27 2015

COPY

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

EPO 15-063

March 24, 2015

Mr. David Taylor, P.E., Director
Department of Water Supply
County of Maui
200 South High Street, 5th Floor
Wailuku, Hawaii 96793

Attention: Tom Ochwat, P.E. – Engineering Division

Dear Mr. Taylor:

SUBJECT: Draft Environmental Assessment (DEA) for Proposed IAO Water Treatment Plant Upgrades at TMK: (2) 3-5-001:067 (POR.) Wailuku, Maui, Hawaii

The Department of Health (DOH), Environmental Planning Office (EPO), thanks you for allowing us to review and comment on the proposed Iao Water Treatment Plant Upgrade available on the OEQC website at: http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Maui/2010s/2015-03-23-MA-5B-DEA-Iao-Water-Treatment-Plant-Upgrades.pdf

The DEA was routed electronically to the District Health Office on Maui, and the Clean Water, and Safe Drinking Water Branches. They will provide specific comments to you if necessary. EPO recommends that you review the standard comments and available strategies to support sustainable and healthy design provided at: http://health.hawaii.gov/epo/home/landuse-planning-review-program Projects are required to adhere to all applicable standard comments.

We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: https://eha-cloud.doh.hawaii.gov

You may also wish to review the revised Water Quality Standards Maps that have been updated for all islands. The Water Quality Standards Maps can be found at: http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

c: Tessa Munekiyo Ng, AICP, Munekiyo Hiraga
DHO Maui, CWB, & SDWB {via email only}

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EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii EPO 15-063

Dear Ms. McIntyre:

Thank you for your letter dated March 24, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. As recommended, the County of Maui Department of Water Supply (DWS) will review standard comments and available strategies to support sustainable and healthy designs, at the website noted. DWS will also reference the Hawaii Environmental Health Portal and updated Water Quality Standards maps.

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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APR 23 2015

DAVID Y. IGE
GOVERNOR OF HAWAII

CARTY S. CHANG
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 21, 2015

David Taylor, P.E., Director
Attention: Tom Ochwat, P.E. – Engineering Division
Department of Water Supply, County of Maui
200 South High Street, 5th Floor
Wailuku, Hawaii 96793

William Spence, Director
Attention: Paul Fasi, Planner
Department of Planning, County of Maui
2000 Main Street, Suite 619
Wailuku, Hawaii 96793

via email: Paul.Fasi@co.maui.hi.us

Munekiyo & Hiraga, Inc.
Attention: Tessa Munekiyo Ng, Vice President
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Ochwat, Mr. Fasi, and Ms. Munekiyo Ng:

SUBJECT: Iao Water Treatment Plant Upgrades

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from the Engineering Division on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Kevin E. Moore
Acting Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

CARTY S. CHANG
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 24, 2015

'15 MAR 24 AM 10:55 ENGINEERING RECEIVED LAND DIVISION

2015 APR 14 PM 2:49 DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

MEMORANDUM

TO: FR.

DLNR Agencies:
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_Engineering Division
___Div. of Forestry & Wildlife
___Div. of State Parks
_X_Commission on Water Resource Management
___Office of Conservation & Coastal Lands
_X_Land Division – Maui District
_X_Historic Preservation

FROM: TO:
SUBJECT: Kevin E. Moore, Acting Land Administrator
LOCATION: Iao Water Treatment Plant Upgrades
APPLICANT: Wailuku, Island of Maui; TMK: (2) 3-5-001:067 (por.) & 091 (por.)
County of Maui, Department of Water Supply

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 20, 2015.

Only one (1) copy of the CD is available for your review in Land Division office, Room 220.

If no response is received by this date, we will assume that your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed:
Print Name: for Carty S. Chang, Chief Engineer
Date: 4/14/15

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/ Kevin E. Moore
Ref.: DEA and Project District Phase II Application for New Iao Water Treatment Plant
Maui.008

COMMENTS

(X) **We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X.**

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is also located in Zone ____.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project site must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.

( ) Mr. Carolyn Cortez at (808) 270-7253 of the County of Maui, Department of Planning.

( ) Mr. Stanford Iwamoto at (808) 241-4896 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

_____

( ) Other: _____

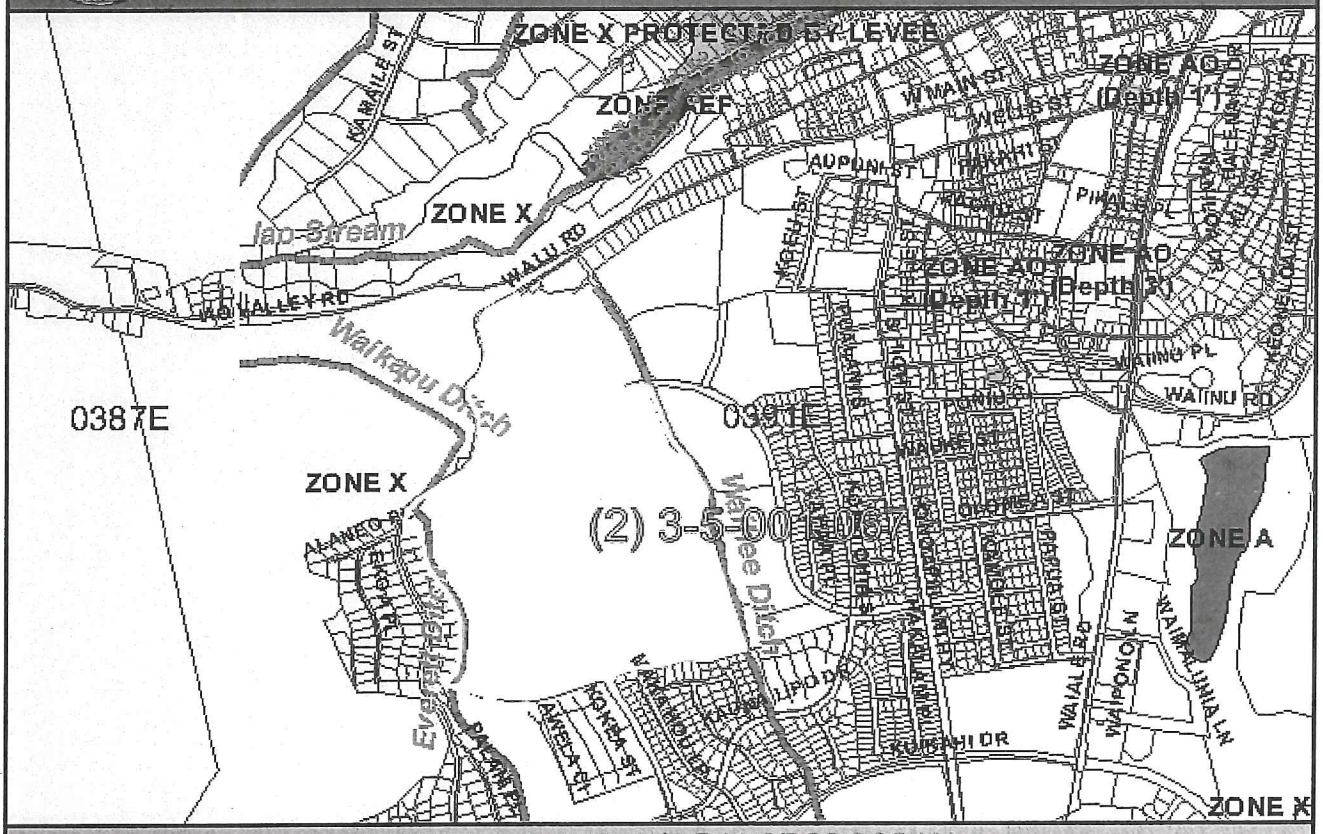
Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: _____
for CARTY S. CHANG, CHIEF ENGINEER

Date: 4/14/15

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- **Zone A:** No BFE determined.
- **Zone AE:** BFE determined.
- **Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY:	MAUI
TMK NO:	(2) 3-5-001-067
PARCEL ADDRESS:	S ALU RD WAILUKU, HI 96793
FIRM INDEX DATE:	SEPTEMBER 19, 2012
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL(S):	1500030391E
PANEL EFFECTIVE DATE:	SEPTEMBER 25, 2009

PARCEL DATA FROM:	JULY 2013
IMAGERY DATA FROM:	MAY 2005

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
County of Maui	
Carolyn Cortez	(808) 270-7253
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

Disclaimer: The Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR from any liability, which may arise from its use.

If this map has been identified as 'PRELIMINARY' or 'UNOFFICIAL', please note that it is being provided for informational purposes and is not to be used for official/legal decisions, regulatory compliance, or flood insurance rating. Contact your county NFIP coordinator for flood zone determinations to be used for compliance with local floodplain management regulations.

APR 27 2015

DAVID Y. IGE
GOVERNOR OF HAWAII

CARTY S. CHANG
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 24, 2015

David Taylor, P.E., Director
Attention: Tom Ochwat, P.E. – Engineering Division
Department of Water Supply, County of Maui
200 South High Street, 5th Floor
Wailuku, Hawaii 96793

William Spence, Director
Attention: Paul Fasi, Planner
Department of Planning, County of Maui
2000 Main Street, Suite 619
Wailuku, Hawaii 96793

via email: Paul.Fasi@co.maui.hi.us

Munekiyo & Hiraga, Inc.
Attention: Tessa Munekiyo Ng, Vice President
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Ochwat, Mr. Fasi, and Ms. Munekiyo Ng:

SUBJECT: Iao Water Treatment Plant Upgrades

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you on April 21, 2015 enclosed are comments from the Commission on Water Resources Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Kevin E. Moore
Acting Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

CARTY S. CHANG
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 24, 2015

MEMORANDUM

TO: DLNR Agencies:
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_Engineering Division
___Div. of Forestry & Wildlife
___Div. of State Parks
_X_Commission on Water Resource Management
___Office of Conservation & Coastal Lands
_X_Land Division – Maui District
_X_Historic Preservation

FROM: Kevin E. Moore, Acting Land Administrator
SUBJECT: Iao Water Treatment Plant Upgrades
LOCATION: Wailuku, Island of Maui; TMK: (2) 3-5-001:067 (por.) & 091 (por.)
APPLICANT: County of Maui, Department of Water Supply

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 20, 2015.

Only one (1) copy of the CD is available for your review in Land Division office, Room 220.

If no response is received by this date, we will assume that your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached. (No additional comments). (See attached Nov. 15, 2013 comments).

Signed: W. Roy Hardy
Print Name: Acting Deputy Director
Date: April 21, 2015

cc: Central Files

FILE ID: MD 3962.6
DOC ID: 126851

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

November 15, 2013

REF: RFD.3862.6

Munekiyo & Hiraga, Inc.
Attention: Tessa Munekiyo Ng, AICP, Senior Associate
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Ng:

SUBJECT: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii

DWS Job No.: 12-03
TMK NO.: (2) 3-5-001:067 (por.) and 091 (por.)

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://www.hawaii.gov/dlnr/cwrm.

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☐ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/.

☐ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☐ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

FILE ID: RFD.3862.8
DOC ID: 11385

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/info_permits.htm.

☒ 8. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 9. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.

☐ 10. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 11. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 12. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 13. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.

☐ 14. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 15. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 16. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☒ OTHER:
On March 31, 2009, the County of Maui Department of Water Supply (Maui DWS) submitted a Surface Water Use Permit Application for Existing Use in the Na Wai Eha, Maui, Surface Water Management Areas, requesting an amount of 1.784 million gallons per day (mgd). An accompanying Surface Water Use Permit Application for Proposed New Use was also submitted, requesting an additional amount of 1.416 mgd. At this time, the Commission on Water Resource Management is still in the process of determining instream flow standards for the Na Wai Eha Surface Water Management Areas, and no decisions have been made on the allocated use of surface water for Maui DWS. Please be aware that any expanded use of water by the Iao Water Treatment Plant will be subject to surface water use permit allocations once they are decided.

If there are any questions, please contact Dean Uyeno at (808) 587-0249.

Sincerely,

WILLIAM M. TAM
Deputy Director

MUNEKIYO HIRAGA
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Michael T. Munekiyo
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Karlynn K. Fukuda
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Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Russell Y. Tsuji
Land Administrator
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Draft Environmental Assessment (EA 2015/0001) and Project District Phase II Application (PH2 2015-0001) for Proposed Iao Water Treatment Plant (WTP) Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Mr. Tsuji:

Thank you for your letters dated April 21, 2015 and April 24, 2015 providing correspondence on our request for comments on the Draft Environmental Assessment (EA) document and Project District Phase II Application. On behalf of the County of Maui Department of Water Supply (DWS), we provide the following information in response to comments received.

Engineering Division Comments:

We appreciate the confirmation that the project site is located within Flood Zone X.

Commission on Water Resources Management Comments:

We acknowledge that the CWRM does not have additional comments beyond those provided in its November 15, 2013 letter. The letter confirmed that on March 31, 2009, the County DWS submitted a Surface Water Use Permit Application for Existing Use in the Na Wai Eha, Maui, Surface Water Management Area. Also that conditions of a Water Use Permit may require use of a dual line water supply system for new industrial and commercial developments.

In April 2014, parties involved with the surface water management area came to an agreement with respect to the Interim Instream Flow Standards (IIFS) and CWRM approved the agreement. CWRM has concluded that the 3.2 million gallons per day of

water for DWS' Iao Water Treatment Plant Facility is a reasonable current and future use of water diverted from Iao Stream for purposes of the restoration of stream flows under an amended IIFS.

The water use application proceedings are still pending and once CWRM issues the permit, the County DWS will comply with all applicable conditions.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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JUN 19 2015

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 17, 2015

David Taylor, P.E., Director
Attention: Tom Ochwat, P.E. – Engineering Division
Department of Water Supply, County of Maui
200 South High Street, 5th Floor
Wailuku, Hawaii 96793

William Spence, Director
Attention: Paul Fasi, Planner
Department of Planning, County of Maui
2000 Main Street, Suite 619
Wailuku, Hawaii 96793

via email: Paul.Fasi@co.maui.hi.us

Munekiyo & Hiraga, Inc.
Attention: Tessa Munekiyo Ng, Vice President
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Ochwat, Mr. Fasi, and Ms. Munekiyo Ng:

SUBJECT: Iao Water Treatment Plant Upgrades

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you on April 21 and 24, 2015, enclosed are comments from the State Historic Preservation Division on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
FIRST DEPUTY

W. ROY HARDY
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

June 16, 2015

MEMORANDUM

TO: Russell Y. Tsuji, Land Administrator
DLNR Land Division
Via email to: Russell.Y.Tsuji@hawaii.gov

Log No: 2015.01135
Doc No: 1506JP14
Archaeology

FROM: Morgan E. Davis, Lead Archaeologist, Maui Section

SUBJECT: **Chapter 6E-8 Historic Preservation Review-**
'Iao Water Treatment Plant Upgrades Draft Environmental Assessment
Wailuku Ahupua'a, Wailuku District, Island of Maui
TMK (2) 3-5-001:067 (por.) and 091 (por.)

Thank you for the opportunity to comment on the submittal that we received on March 30, 2015. The Draft Environmental Assessment was prepared for the replacement of the existing Water Treatment Plant with a new Water Treatment Plant, adjacent to the existing 3.0 million gallon Iao tank site. The subject area includes approximately 2.6 acres (Parcel 067 por.) and an undefined portion of Parcel 091 for an access road and possibly subsurface infrastructure.

Construction plans include a treatment plant building including a filtration area as well as separate rooms for office/laboratory, break room with restroom, storage rooms, electrical room, and generator room. The filtration area will house four membrane filtration units as well as other equipment; an above ground 2,000 gallon diesel fuel tank; a dual compartment sludge lagoon constructed of concrete to contain the backwash and discharge water; a chlorine contact tank; a finish water line (a portion to be within West Alu Road); a gravity wastewater line; and a drainage system. Upon completion of the new facility, the existing tank site will be decommissioned.

The submittal includes a copy of an Archaeological Assessment Survey compiled by Scientific Consultant Services, Inc. Unfortunately, we are unable to accept the report in its current form and have requested several revisions (*Log 2013.6035, Doc 1506JP01*). This area was once the location of pre-and post-Contact agricultural activities in addition to temporary and permanent habitation sites. Despite intense cultivation activities in the area, it is possible that both pre- and post-Contact archaeological features may still be present in the subsurface matrix. At this time, we are not able to determine whether historic properties will be affected by the proposed project. We recommend that an **archaeological inventory survey with subsurface testing** be conducted for the project area. An archaeological survey including subsurface testing is needed to identify and evaluate historic properties within the parcel and provide recommendations for appropriate mitigation measures. If historic properties are identified, mitigation measures may need to be proposed to avoid or minimize potential impacts to archaeological, cultural and historic resources. Subsequently, we do not concur with the conclusions outlined in Section 8: Archaeological Resources. We need **additional information.**

We are awaiting the submittal of the revised archaeological report that needs to clearly demarcate the project area and the inclusion of the results of mechanical subsurface testing.

cc: County of Maui
Department of Planning
Planning@co.maui.hi.us

County of Maui
Department of Public Works – DSA
Renee.Segundo@co.maui.hi.us

County of Maui
Cultural Resources Commission
Annalise.Kehler@co.maui.hi.us

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Michael T. Munekiyo
PRESIDENT
Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Russell Y. Tsuji
Land Administrator
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Draft Environmental Assessment (EA 2015/0001) and Project District Phase II Application (PH2 2015-0001) for Proposed Iao Water Treatment Plant (WTP) Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii, Log No: 2015.01135, Doc No: 1506JP14

Dear Mr. Tsuji:

Thank you for your letter dated June 17, 2015, providing comments received by your State Historic Preservation Division (SHPD) on the Draft Environmental Assessment (EA) document and Project District Phase II Application. On behalf of the County of Maui, Department of Water Supply (DWS), we acknowledge SHPD's Lead Archaeologist, Maui Section recommendation that in addition to a pedestrian survey provided in the October 2013 Archaeological Assessment Survey (AAS) compiled by Scientific Consultant Services, that an Archaeological Inventory Survey (AIS) with subsurface testing be conducted.

In response to your letter, further coordination with SHPD was conducted which prompted a field review by SHPD archaeologist, Ms. Jenny Pickett on July 6, 2015. At this site review, Ms. Pickett confirmed that subsurface test trenching was not required and no further archaeological investigation work was warranted.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
Mike Dega, Scientific Consulting Services, Inc.
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DAVID Y. IGE
GOVERNOR

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:
STP 8.1787

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

April 23, 2015

Mr. David Taylor, P.E., Director
Attention: Mr. Tom Ochwat, P.E. – Engineering Division
County of Maui
Department of Water Supply
200 South High Street, 5th Floor
Wailuku, Hawaii 96793

Dear Mr. Ochwat:

Subject: Iao Water Treatment Plant Upgrades
Draft Environmental Assessment (EA)
Wailuku, Maui, Hawaii
TMK: (2) 3-5-001:067 (Por.) and 091 (Por.)

The subject project is not expected to significantly impact the State highway facility. However, the developer is required to obtain a permit from Department of Transportation (DOT) Highways Division, Maui District Office for the transport of oversized and/or overweight materials and equipment on State highway facilities.

If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Sincerely,

FORD N. FUCHIGAMI
Director of Transportation

c: Tessa Munekiyo Ng, Munekiyo Hiraga

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Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Ford N. Fuchigami, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

SUBJECT: Draft Environmental Assessment (EA 2015/0001) for Proposed Iao Water Treatment Plant (WTP) Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii, STP 8.1787

Dear Mr. Fuchigami:

Thank you for your letter dated April 23, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. The County of Maui Department of Water Supply (DWS) acknowledges that the State Department of Transportation (DOT) does not expect the project to have a significant impact on the State highway facility. A permit from DOT's Highway's Division, Maui District Office is also required for the transport of oversized and/or overweight materials and equipment on State highway routes. DWS will inform its contractors and maintenance operations staff of this requirement.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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015185

DAVID Y. IGE
GOVERNOR

ARTHUR J. LOGAN
BRIGADIER GENERAL
ADJUTANT GENERAL

KENNETH S. HARA
COLONEL
DEPUTY ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

April 8, 2015

Mr. David Taylor, P.E., Director
Department of Water Supply
County of Maui
200 South High Street, 5th Floor
Wailuku, Hawai'i 96793

RECEIVED
COUNTY OF MAUI
2015 APR 13 PM 3:11
DEPT. OF WATER SUPPLY

Attn: Mr. Tom Ochwat, P.E. – Engineering Division

Subject: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades at TMK (2) 3-5-001: 067 (por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Mr. Ochwat:

Thank you for the opportunity to comment on the above project. The State of Hawaii Department of Defense has no comments to offer relative to the project at this time.

Please provide a copy of the Final Environmental Assessment upon its completion, and contact Ms. Havinne Okamura of the Department of Defense, Hawaii Emergency Management Agency at 733-4300 for input regarding the Proposed Iao Water Treatment Plant. If you have any questions or concerns, please have your staff contact Mr. Lloyd Maki, Assistant Chief Engineering Officer at (808) 733-8441.

Sincerely,

for ARTHUR J. LOGAN
Brigadier General
Hawaii National Guard
Adjutant General

c: Ms. Havinne Okamura, Hawaii Emergency Management Agency
Munekiyo Hiraga, 305 High Street, Suite 104, Wailuku, Hawaii 96793

APR 13 2015

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Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Arthur J. Logan, Brigadier General
State of Hawaii
Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2) 3-5-001:067 (por.) and 091 (por.); Wailuku, Maui, Hawaii

Dear Mr. Logan:

Thank you for your letter, dated April 8, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. The County of Maui, Department of Water Supply (DWS) acknowledges that your Department has no comments to offer on the proposed project at this time. As requested, a copy of the Final EA will be sent to your Department.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
K:\DATA\ATA\Iao WTF Upgrades\Draft EA\Response Letters\DODres.letter.docx

Maui: 305 High Street, Suite 104 · Wailuku, Hawaii 96793 · Tel: 808.244.2015 · Fax: 808.244.8729
Oahu: 735 Bishop Street, Suite 321 · Honolulu, Hawaii 96813 · Tel: 808.983.1233
www.munekiyohiraga.com

APR 27 2015

PHONE (808) 594-1888

FAX (808) 594-1938

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

HRD15/7426

April 21, 2015

David Taylor, P.E., Director
Department of Water Supply
200 South High Street
Wailuku, HI 96793

Re: Request for Comments on the Draft Environmental Assessment for Proposed ʻĪao Water Treatment Plant Upgrades
Wailuku Ahupuaʻa, Pūʻali Komohana Moku, Maui Island
Tax map keys: (2) 3-5-001:067 (por.) and 091 (por.)

Aloha Mr. Taylor:

The Office of Hawaiian Affairs (OHA) is in receipt of your March 19, 2015 letter requesting comments on the draft environmental assessment (DEA) for the ʻĪao water treatment plant (ʻĪao WTP) upgrade project. The Maui County, Department of Water Supply (MDWS) is proposing to replace and relocate the existing ʻĪao WTP with a new facility. The existing ʻĪao WTP consists of three pressure membrane units that produce approximately 1.7 million gallons per day (mgd) of treated water. By contrast, the proposed ʻĪao WTP will produce approximately 3.2 mgd of treated water to meet future population demands. The proposed relocation site is currently two parcels owned by RCFC Kehalani LLC; the MDWS is in the process of acquiring both parcels for the proposed ʻĪao WTP.

The major components of the proposed ʻĪao WTP consist of a treatment plant building with four membrane filtration units, an above-ground 2,000 gallon diesel fuel tank, a dual-compartment sludge lagoon, a chlorine contact tank to disinfect the filtered water, a gravity wastewater line from the restroom at the treatment plant, and a drainage system to convey on-site runoff.

As the constitutionally-established body responsible for protecting and promoting the rights of Native Hawaiians, OHA appreciates this opportunity to comment. OHA has substantive obligations to protect the cultural and natural resources of Hawai'i for its beneficiaries. Accordingly, OHA is required to serve as the principal public agency in the State of Hawai'i responsible for the performance, development, and coordination of programs and activities relating to Native Hawaiians; assess the policies and practices of other agencies impacting Native Hawaiians; and conduct advocacy efforts for Native Hawaiians.[1] The following comments reflect OHA's responsibility to better the conditions of Native Hawaiians. OHA offers general comments on the draft environmental assessment, as discussed below.

Streams of Nā Wai 'Ēha

OHA's main concern is with the effects of the proposed 'Īao WTP on the streams of central Maui. 'Īao Stream[2] is one of the four streams that comprise Nā Wai 'Ēha; the other three are Waihe'e River, Waiehu Stream, and Waikapū Stream.

On June 25, 2004, Hui O Nā Wai 'Ēha (Hui) and Maui Tomorrow Foundation, Inc. (MTF) filed a Petition to Amend the Interim Instream Flow Standards (IIFS) for the Waihe'e River and the Waiehu, 'Īao, and Waikapū Streams. The State of Hawai'i Commission on Water Resource Management (CWRM) released its final Findings of Fact, Conclusions of Law, and Decision and Order on June 10, 2010. OHA joined the Hui and MTF in appealing the CWRM decision in 2010. In August 2012, the Hawai'i Supreme Court vacated the CWRM decision and remanded the case to CWRM for further proceedings. A settlement agreement between the parties was finalized on April 17, 2014.

As a party to the Nā Wai 'Ēha settlement agreement, OHA is aware that the increase in water (from 1.7 mgd to 3.2 mgd) from the 'Īao Stream was a part of the approved settlement agreement. Notwithstanding, we ask that no assumptions be made and that a thorough analysis and determination be conducted for the surface water use permit application (SWUPA). The DEA, in addition, does not provide any analysis on how the SWUPA complies with Hawai'i Revised Statutes (HRS) §174C-49.

<u>Surface Water Use Permit Application</u>

According to the DEA, the SWUPA for the proposed 'Īao WTP is still pending. The SWUPA was submitted on March 31, 2009 to the CWRM, but all hearings were placed on hold until a settlement agreement was reached in the Nā Wai 'Ēha case. OHA understands that the SWUPA process is beyond your agency's control and that other planning and actions for the 'Īao WTP can be taken prior to SWUPA approval. Therefore, we ask that if the MDWS moves forward, it be done with acknowledgement that SWUPA approval is still needed.

[1] HRS § 10-3.
[2] More accurately known as the Wailuku River, as recognized by the Maui County Council on April 7, 2015.

Hawai'i Revised Statutes §174C-49

HRS Section 174C-49 sets forth the criteria that must be met for water use permits:

> The applicant shall establish that the proposed use of water: (1) can be accommodated with the available water source; (2) is a reasonable-beneficial use as defined in HRS §174C-3; (3) will not interfere with any existing legal use of water; (4) is consistent with the public interest; (5) is consistent with the state and county general plans, and land use designations; (6) is consistent with county land use plans and policies; and (7) will not interfere with the rights of the Department of Hawaiian Home Lands as provided by section 221 of the Hawaiian Homes Commission Act.

MDWS states that the proposed 'Īao WTP meets all requirements stated by HRS §174C-49, however, it does not provide the analysis in its DEA. OHA asks that this analysis be provided in the DEA to allow the public to clearly understand how the 'Īao WTP complies with the statutory requirements.

Archaeological Resources

An archaeological assessment (AA) of the proposed parcels was completed in October 2013 by Scientific Consultant Services. The AA involved a pedestrian survey and historic background research. OHA understands that the previous use of the land was sugar cane cultivation and pasture, which would have disturbed or destroyed surface cultural sites. Nevertheless, OHA does request assurances that should iwi kūpuna or Native Hawaiian cultural deposits be identified during any ground altering activities, all work in the area will immediately cease and the appropriate agencies, including OHA, will be contacted pursuant to applicable law.

Mahalo for the opportunity to comment. Should you have any questions, please have your staff contact Jeannin Jeremiah at 594-1790 or by email at jeanninj@oha.org.

'O wau iho nō me ka 'oia 'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KC:jj

C: Tom Ochwat, P.E. – Engineering Division, Maui Department of Water Supply
/Tessa Munekiyo Ng, AICP, Vice President – Munekiyo Hiraga

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VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer
State of Hawaii
Office of Hawaiian Affairs
560 N. Nimitz Highway, Suite 200
Honolulu, Hawaii 96817

SUBJECT: Draft Environmental Assessment (EA 2015/0001) and Project District Phase II Application (PH2 2015-0001) for Proposed Iao Water Treatment Plant (WTP) Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii, HRD15/7426

Dear Dr. Crabbe:

Thank you for your letter dated April 21, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document and Project District Phase II Application. On behalf of the County of Maui Department of Water Supply (DWS), we respond to the Office of Hawaiian Affairs (OHA) general comments offered on the Draft EA.

Comment No. 1: Streams of Na Wai 'Eha

OHA's main concern is with the effects of the proposed 'Iao WTP on the streams of central Maui. A settlement agreement between the parties was finalized on April 17, 2014. Notwithstanding, we ask that no assumptions be made and that a thorough analysis and determination be conducted for the surface water use permit application (SWUPA).

Response:

The DWS has completed thorough analysis of County's water source and supply for the entire island. This internal study addresses the County's reliable sources and potential shortfalls with the Island's projected potable water demands. The Surface Water Use Permit Application (SWUPA) submitted by this Department included pertinent and applicable information from this study that satisfies and complies with the Hawai'i Revised Statutes (HRS) §174C-49.

Comment No. 2: Surface Water Use Permit Application

According to the DEA, the SWUPA for the proposed 'Iao WTP is still pending. ... Therefore, we ask that if the MDWS moves forward, it be done with acknowledgement that SWUPA approval is still needed.

Response:

DWS acknowledges that the Commission of Water Resources Management (CWRM) must grant the SWUPA. DWS will fully comply with any conditions specified in the SWUPA and not exceed the current permit allocation granted to the existing Iao WTP.

Comment No. 3: Hawaii Revised Statutes 174C-49

... MDWS states that the proposed 'Iao WTP meets all requirements stated by HRS 174C-49, however, it does not provide the analysis in its DEA. OHA asks that this analysis be provided in the DEA to allow the public to clearly understand how the Iao WTP complies with the statutory requirements.

Response:

The submitted Surface Water Use Permit application has included language and pertinent documents and exhibits that address the criteria set forth within HRS §174C-49 and the items 1 through 7 noted in your letter. DWS acknowledges your request to include this analysis in the EA and will include a brief discussion of the study and analysis relevant to these statutory requirements.

Comment No. 4: Archaeological Resources

... OHA understand that the previous use of the land was sugar cane cultivation and pasture, which would have disturbed or destroyed surface cultural sites. Nevertheless, OHA does request assurances that should iwi kupuna or Native Hawaiian cultural deposits be identified during any ground altering activities, all work in the will imediately cease and the appropriate agencies, including OHA, will be contacted pursuant to applicable law.

Response:

In the construction contract plans, grading notes will include that "In the event historic resources or skeletal remains are identified, all work shall cease in the immediate vicinity of the find. They shall be protected from additional disturbance and the Department of Land and Natural Resources – State Historic Preservation Division (DLNR – SHPD), Maui

Section shall be contacted immediately at (808) 243-5169". The construction plan will also note that OHA be contacted and a phone number will be provided.

We appreciate your participation in the Chapter 343, HRS review and Project District Phase II process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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APR 1 6 2015

OFFICE OF PLANNING
STATE OF HAWAII

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
ACTING DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

Ref. No. P-14711

April 13, 2015

Mr. David Taylor, P.E., Director
Department of Water Supply
200 S. High Street, 5th Floor
Wailuku, Hawaii 96793

Attn.: Tom Ochwat, P.E. – Engineering Division

Dear Mr. Taylor:

Subject: Draft Environmental Assessment for the Iao Water Treatment Plant Upgrades, Wailuku, Maui; Tax Map Key (2) 3-5-001: 067 (por) and 091 (por)

Thank you for the opportunity to provide comments on the Draft Environmental Assessment (Draft EA) for the Iao Water Treatment Plant upgrades which was transmitted to our office by letter dated March 19, 2015.

Based on the transmitted Draft EA, it is our understanding that this project calls for the upgrading of the current Iao Water Treatment Plant with updated components that include a new treatment plant building, an above ground 2,000 gallon diesel fuel tank, a dual-compartment sludge tank, an updated gravity wastewater line, and a more efficient drainage system that will transport runoff off-site.

The Office of Planning has reviewed the Draft EA, and has the following comments to offer:

1. The Draft EA addresses our comments made in a previous pre-consultation request letter, dated November 14, 2013 (reference number P-14173), in regards to Coastal Zone Management Act objectives and the use of the Hawaii Watershed Guidance for coastal pollution concerns. Additionally, the Draft EA has included a discussion on the Hawaii State Plan's policies and objectives listed in the Hawaii Revised Statutes (HRS) Chapter 226, as well as proposed best management practices (BMP) to be used in mitigating the negative effects of storm water runoff. The stormwater mitigation BMP's are listed in the Draft EA, Section II, page 34, as well as a Drainage Report created by Austin, Tsutsumi & Associates contained in Appendix B.

2. Considering the nature of this project, it appears that incorporating resource conservation methods such as water conservation, recycling, and efficiency measures, would be

beneficial to a water treatment plant facility. HRS § 226-108(2), lists the priority guideline on sustainability, which encourages planning that respects and promotes living within the natural resources and limits of the State.

Please consider resource conservation in the development and operation of the planned water treatment facility. Water efficiency measures, recycling practices, and re-use methods are consistent with sustainability principles. The Final Environmental Assessment should consider water resource conservation practices and include a discussion on the priority guideline on sustainability, by including such discussion in Section III, part B, Chapter 226, HRS, Hawaii State Plan.

If you have any questions regarding this comment letter, please contact Josh Hekekia of our office at 587-2845.

Sincerely,

Leo R. Asuncion
Acting Director

c: Tessa Munekiyo Ng, AICP, Vice President

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Karlynn K. Fukuda
EXECUTIVE VICE PRESIDENT
Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Leo R. Asuncion, Acting Director
Office of Planning
State of Hawaii
235 South Beretania Street, 6th Floor
Honolulu, Hawaii 96804

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii Ref. No. P-14711

Dear Mr. Asuncion:

Thank you for your letter dated April 13, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. On behalf of the County of Maui Department of Water Supply (DWS), we acknowledge that the Draft EA has addressed previous pre-consultation comments in your letter dated November 14, 2014. We also acknowledge your recommendations to consider resource conservation in the development and operation of the planned water treatment facility. The Final EA will include a discussion on Hawaii Revised Statutes (HRS), 226-108(2) priority guidelines on sustainability in Section III, part B, Chapter 226, HRS, Hawaii State Plan.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
www.munekiyohiraga.com

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

MAR 30 2015

ALAN M. ARAKAWA
Mayor

JO-ANN T. RIDAO
Director

JAN SHISIHIDO
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX 270-7165 • EMAIL director.hhc@mauicounty.gov

Date: March 25, 2015

To: David Taylor, P.E., Director

From: Wayde T. Oshiro, Housing Administrator

Subject: **Preliminary Planning Review**
Residential Workforce Housing Policy; Ord 3418
Chapter 2.96, MCC; effective 12/5/2006

Project Name: **Draft EA for Proposed Iao Water Treatment Plant Upgrades**
Applicant: **Department of Water Supply**
Subject I.D.: **DWS Job No. 12-03**
TMK: (2) 3-5-001:067 (Por) and 091 (Por.)

Street Address: West Alu Road, Wailuku, Maui, Hawaii
Determination:

☑ **Not-Applicable**
Does not meet applicability as set forth in 2.96.030(A), MCC

☐ **Applicable**
- ☐ **No Exemptions**
- ☐ **Exemptions: (2.96.030)**
  - ☐ B.1. An executed affordable housing agreement, currently in effect and approved prior to the effective date of chapter.
  - ☐ B.2. A development subject to a change in zoning condition that requires affordable or residential workforce housing.
  - ☐ B.3. A subdivision granted preliminary subdivision approval prior to the effective date of this chapter. (12/5/2006)
  - ☐ B.4. A building permit application submitted prior to the effective date of this chapter.
  - ☐ B.5. A family subdivision, for immediate family members, as described in sections 18.20.280(B)(1) and (B)(2) of this code.
  - ☐ B.6. A development by a government entity, 201H, community land trust, or an affordable housing project with more than the residential workforce housing units, in-lieu fees, or in-lieu land required by section 2.96.040, as approved by the director.

Additional Comments:

☐ **See comments below** ☐ **See Attachment(s)**
☑ **We have NO comment**

Reviewed By: Wayde T. Oshiro — 3/25/2015
Wayde T. Oshiro, Housing Administrator — Date

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Mark Alexander Roy
VICE PRESIDENT
Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Wayde T. Oshiro, Administrator
Department of Housing and Human Concerns
County of Maui
35 Lunalilo Street, Suite 102
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Mr. Oshiro:

Thank you for your letter dated March 25, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. The County of Maui, Department of Water Supply (DWS) acknowledges that your Department has no comments to offer on the proposed project. We note that Residential Workforce Housing Policy set forth in Maui County Code Chapter 2.96 is not applicable to the proposed project.

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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ALAN M. ARAKAWA
Mayor

KA'ALA BUENCONSEJO
Director

BRIANNE L. SAVAGE
Deputy Director

APR 16 2015

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

(808) 270-7230
FAX (808) 270-7934

April 7, 2015

Mr. David Taylor, P.E., Director
Attention: Tom Ochwat, P.E. - Engineering Division
Department of Water Supply
County of Maui
200 South High Street, 5th Floor
Wailuku, Hawaii 96793

Dear Mr. Taylor:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT AND PROJECT DISTRICT PHASE II (PH2) APPLICATION FOR PROPOSED IAO WATER TREATMENT PLANT AT TMK: (2) 3-5-001:067(POR.) WAILUKU, MAUI, HAWAII

Thank you for the opportunity to review and comment on the subject project. The Department of Parks & Recreation has no comment at this time and looks forward to reviewing the Environmental Assessment when it is available.

Should you have any questions or concerns, please feel free to contact me, or Robert Halvorson, Chief of Planning and Development, at 270-7931.

Sincerely,

KA'ALA BUENCONSEJO
Director of Parks & Recreation

c: Paul Fasi, Department of Planning
Tessa Munekiyo Ng, Munekiyo Hiraga
Robert Halvorson, Chief of Planning and Development

KB:RH:csa

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VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

Ka'ala Buenconsejo, Director
Department of Parks and Recreation
County of Maui
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment and Project District Phase II Application for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Mr. Buenconsejo:

Thank you for your letter dated April 7, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document and the Project District Phase II Application. The County of Maui, Department of Water Supply (DWS) acknowledges that your Department has no comments to offer on the proposed project at this time. As requested, a copy of the Final EA will be sent to your department.

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes (HRS) review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

MAY 20 2015

COUNTY OF MAUI
DEPARTMENT OF PLANNING

May 20, 2015

Mr. Dave Taylor
Director, Department of Water Supply
County of Maui
250 South High Street, 5th Floor
Wailuku, Hawaii 96793

Attention: Thomas Ochwat, CIP Division

Dear Mr. Taylor:

SUBJECT: MAUI PLANNING COMMISSION COMMENTS ON THE PROPOSED IAO WATER TREATMENT PLANT UPGRADES; TMK: (2) 3-5-001:067

On May 12, 2015, the Maui Planning Commission (Commission) reviewed the Draft Environmental Assessment (DEA) for the above proposed project. Please respond to the following Commission comments and/or concerns:

1. The existing Water Treatment Plant (WTP) site does not have any landscaping or ground cover that opens the area to erosion. Entire site needs landscaping after decommissioning of water treatment plant filtration units;

2. The new WTP site located at the sharp curve in South/West Alu Road needs to have its landscaping and fencing appropriately setback to not obstruct drivers' lines of sight of oncoming vehicles approaching around the 'blind' curve;

3. The Chlorine Contact Tank height should not obstruct drivers' line of sight around the 'blind' curve. Explore options to lower the structure design elevations to minimize view impacts;

4. Future site design of driveway parcel between MECO Substation and new WTP site should provide parking spaces for hikers that use the nature trail. Hikers currently park above the MECO Substation where the new WTP site's driveway will be constructed. Hikers' access to the trail should not be obstructed;

5. Provide information on what volume of chemicals will be used, stored, and disposed of at the proposed WTP site. The DEA only lists the type of chemicals to be used;

6. At the existing WTP site, provide information on how much chemicals are used, stored, and disposed. Also, what kind of protections are in place to prevent potential ground well contamination; and

7. The DEA elevation visuals look different between the engineering drawings and photographic renderings.

Thank you for your cooperation. If additional clarification is required, please contact Staff Planner Paul Fasi at paul.fasi@mauicounty.gov or at (808) 270-7814.

Sincerely,

WILLIAM SPENCE
Planning Director

xc: Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)
Thomas Ochwat, Department of Water Supply, 5th Floor
Paul F. Fasi, Staff Planner (PDF)
Charlene Shibuya, Munekiyo Hiraga
Project File
General File

WRS:PFF:ls
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Tessa Munekiyo Ng
VICE PRESIDENT

Mitsuru "Mich" Hirano
SENIOR ADVISOR

July 20, 2015

William Spence, Director
Department of Planning
Attention: Paul Fasi
County of Maui
2200 Main Street, Suite 619
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment and Project District Phase II Application for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Mr. Spence:

Thank you for your letter dated May 20, 2015 providing comments from the Maui Planning Commission during its review of the Draft Environmental Assessment (EA) document on May 12, 2015. On behalf of the County of Maui Department of Water Supply (DWS), we offer the following responses to comments and/or concerns in the order listed in your letter.

Comment No. 1:

The existing Water Treatment Plant (WTP) site does not have any landscaping or ground cover that opens the area to erosion. Entire site needs landscaping after decommissioning of water treatment plant filtration units.

Response: With the decommissioning of the existing WTP, temporary erosion control during construction will be implemented as required per Maui County Code 20.08 Soil Erosion and Sediment Control. Post construction best management practices (BMP) will include grassing and stabilization of all disturbed areas for permanent erosion control.

Comment No. 2:

The new WTP site located at the sharp curve in South/West Alu Road needs to have its landscaping and fencing appropriately setback to not obstruct drivers' lines of sight of oncoming vehicles approaching around the 'blind' curve.

Response: An engineering sight distance analysis will be conducted to determine the appropriate setback required to not obstruct driver's clear lines of sight around the sharp curve on South/West Alu Road. Landscaping and fencing will be setback further beyond the right-of-way line if necessary.

Comment No. 3:

The Chlorine Contact Tank height should not obstruct driver's line of sight around the 'blind' curve. Explore options to lower the structure design elevations to minimize view impacts.

Response: An alternative design option has been developed to reduce the Chlorine Contact Tank (CCT) height by 13 feet. Revised plans depicting the lower CCT height will be included in the Final EA. Also, the structure setback will be checked relative to not obstructing drivers' clear lines of sight around the sharp curve on South/West Alu Road.

Comment No. 4:

Future site design of driveway parcel between MECO Substation and new WTP site should provide parking spaces for hikers that use the nature trail. Hikers currently park above the MECO Substation where the new WTP site's driveway will be constructed. Hiker's access to the trail should not be obstructed.

Response: The proposed WTP site and adjacent parcel proposed for the WTP driveway will not obstruct any roadside shoulder parking areas presently used by hikers that currently park within the West Alu Road right-of-way. The frontages of the WTP site and driveway parcel will have approximately 20 feet wide shoulders along a 240 feet stretch. Therefore, provisions for on-site parking will not be necessary. DWS understands that the hiking trails referred to in the comment are located to the west of the project site and that, therefore, the proposed project should not block access to said trail.

Comment No. 5:

Provide information on what volume of chemicals will be used, stored, and disposed of at the proposed WTP site. The Draft Environmental Assessment only lists the type of chemicals to be used.

Response: Information on chemical usage per year is included in the Draft Environmental Assessment, Appendix A: Preliminary Engineering Report (PER),

Table 2 Chemical Usage Design Criteria. Chemical use, storage, handling, and disposal at the proposed WTP site will be in strict compliance with the Environmental Protection Agency (EPA), State Department of Health – Clean Water Branch (DOH-CWB), Occupational Safety and Health Administration (OSHA), and any other applicable government regulations. Material Safety Data Sheets (MSDS) will be posted at required locations to insure proper handling, storage, and disposal information is readily available for daily operations staff.

Comment No. 6:

At the existing WTP site, provide information on how much chemicals are used, stored, and disposed. Also, what kind of protections are in place to prevent potential ground well contamination.

Response: Existing disinfection is done with chlorine gas. The existing WTP has three unsheltered high pressure membrane filtration units with a clean-in-place (CIP) chemical system. A periodic CIP process occurs where the filters are cleansed with chlorine bleach and backwash water that is discharged into the Waihee Ditch which carries water for agricultural use only. The backwash water becomes diluted to safe levels upon entering the ditch waters.

The proposed WTP will utilize an improved disinfection method using Hypo-chlorite instead of chlorine gas.

Chemical use, storage, handling and disposal at the existing WTP is subject to the same regulatory requirements cited for the proposed WTP.

Comment No 7:

The DEA elevation visuals look different between the engineering drawings and photographic renderings.

Response: The Draft EA elevation visual has been revised to reflect a lowered CCT building. The revised elevations will be included in the Final EA.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Munekiyo Ng, AICP
Vice President

TMN:lh
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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APR 13 2015 RECD

POLICE DEPARTMENT
COUNTY OF MAUI

ALAN M. ARAKAWA
MAYOR

OUR REFERENCE

YOUR REFERENCE

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

TIVOLI S. FAAUMU
CHIEF OF POLICE

DEAN M. RICKARD
DEPUTY CHIEF OF POLICE

April 8, 2015

MEMORANDUM

TO: DAVID TAYLOR, P.E., DIRECTOR
DEPARTMENT OF WATER SUPPLY

FROM : TIVOLI S. FAAUMU, CHIEF OF POLICE

SUBJECT : DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED IAO WATER TREATMENT PLANT UPGRADES AT TMK (2) 3-5-001:067 (por.) and 091 (por.)

____ No recommendation or comment to offer.

__x__ Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project.

Assistant Chief Victor K. Ramos
For: TIVOLI S. FAAUMU
Chief of Police

c: William Spence, Maui County Planning Department
Tessa Munekiyo Ng, Munekiyo & Hiraga, Inc.

TO	:	**TIVOLI S. FAAUMU, CHIEF OF POLICE, COUNTY OF MAUI**
VIA	:	**CHANNELS**
FROM	:	**AYLETT WALLWORK, POLICE OFFICER III, COMMUNITY POLICING, WAILUKU PATROL DIVISION**
SUBJECT	:	**RESPONSE TO A REQUEST FOR COMMENTS REGARDING IAO WATER TREATMENT PLANT UPGRADES**

Victor K. Ramos
Assistant Chief

This communication is submitted as a response to a request for comments by the Maui County, Department of Water Supply, who is proposing to replace the existing Iao Water Treatment Plant with a new Water Treatment Plant.

04/08/15

PROJECT	:	**PROPOSED IAO WATER TREATMENT PLANT UPGRADES**
LOCATION	:	**AREA OF KEHALANI DEVELOPMENT WAILUKU, MAUI, HAWAII**
TMK	:	**(2) 3 – 5 – 001:067 (POR.) 091 (POR.)**

RESPONSE:

In review of the submitted documents, the concern from the police perspective is the impacts upon vehicular and pedestrian movement as well as the public's safety. Maui County Department of Water Supply is proposing to replace the existing Iao Water Treatment Plant with a new Water Treatment Plant (WTP), west of the existing plant. Construction should not have any impact to vehicular and pedestrian movements or the public's safety. There is adequate on-site parking for workers and their vehicles. The proposed site is not in an area that can be accessed by the roadway, but can be accessed through the existing Iao WTP site. At this time it is undetermined when this project will commence.

There are no objections to the progression of this project. It must be stated that all those involved in this project must remain cognizant in maintaining the safety of the general public.

Respectfully submitted for your review and approval.

11764

Aylett Wallwork e#11764
P.O. III, Community Policing, Wailuku Patrol Division
04/06/2015 @ 0930 hours

For review by DWS.
Cpt. 4/6/15

MUNEKIYO HIRAGA
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Michael T. Munekiyo
PRESIDENT
Karlynn K. Fukuda
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SENIOR ADVISOR

July 20, 2015

Tivoli S. Faaumu, Chief
Maui Police Department
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Chief Faaumu:

Thank you for your letter dated April 8, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document. The County of Maui, Department of Water Supply (DWS) acknowledges that your Department has no objections to the progression of the project and that construction impacts to vehicular and pedestrian movements or the public's safety are not anticipated.

Also, DWS acknowledges your Department's recommendations that those involved with the project remain cognizant in maintaining the safety of the general public.

We appreciate your participation in the Chapter 343, HRS review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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Maui: 305 High Street, Suite 104 • Wailuku, Hawaii 96793 • Tel: 808.244.2015 • Fax: 808.244.8729
Oahu: 735 Bishop Street, Suite 321 • Honolulu, Hawaii 96813 • Tel: 808.983.1233
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APR 0 9 2015

AGENCY TRANSMITTAL RESPONSE e-FORM

FOR DEPARTMENT OF PLANNING, COUNTY OF MAUI

April 2, 2015

AGENCY NAME	**Department of Environmental Mgmt.**	**PHONE**	**270-8230**
PROJECT:	Iao Water Treatment Plant Upgrades		
APPLICANT:	County of Maui, Department of Water Supply		
PERMIT NO:	EA 2015/0001 PH2 2015-0001		
TMK:	(2)3-5-001:067 (por.) and 091 (por.)		
STREET ADDRESS:	West Alu Road about 800 feet west of Iao Valley Road intersection		
PROJECT DESCRIPTION:	Replace existing water treatment plant (WTP) with a new WTP adjacent to the existing site of DWS' 3.0 million gallon Iao tank.		
SECURITY CODE:			

☒ **COMMENTS/RECOMMENDATIONS** ☐ **NO COMMENTS**

WASTEWATER RECLAMATION DIVISION COMMENTS

a. Although wastewater system capacity is currently available as of the date of this letter, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.

b. Wastewater contribution calculations are required before building permit is issued.

c. Developer is not required to pay assessment fees, since this is a County of Maui project.

d. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.

e. Plans should show the installation of a single service lateral and a property sewer service manhole near the property line.

f. Kitchen facilities within the proposed project shall comply with pre-treatment requirements (including grease interceptors, sample boxes, screens etc.)

g. Non-contact cooling water and condensate should not drain to the wastewater system.

☐ **COMMENTS/RECOMMENDATIONS** ☒ **NO COMMENTS**

SOLID WASTE DIVISION COMMENTS

Signed:			
Print Name:	**Michael M. Miyamoto, Deputy Director**		**Date 4/2/15**

MUNEKIYO HIRAGA
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SENIOR ADVISOR

July 20, 2015

Michael M. Miyamoto, Deputy Director
Department of Environmental Management
County of Maui
2050 Main Street, Suite 1C
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment (EA 2015/0001) and Project District Phase II Application (PH2 2015-0001) for Proposed Iao Water Treatment Plant Upgrades; TMK (2)3-5-001:067(por.) and 091 (por.), Wailuku, Maui, Hawaii

Dear Mr. Miyamoto:

Thank you for your letter dated April 2, 2015 responding to our request for comments on the Draft Environmental Assessment (EA) document and Project District Phase II Application. On behalf of the County of Maui, Department of Water Supply (DWS), we offer the following information to address comments in the order listed in your letter.

1. We acknowledge that wastewater system capacity cannot be ensured until the issuance of the building permit.

2. Wastewater contribution calculations will be provided to your department prior to the building permit being issued.

3. We acknowledge that DWS will not be subject to wastewater assessment fees.

4. DWS will fund any necessary off-site improvements to collection systems and wastewater pump stations as applicable to the project.

5. Final construction plans will include a new 8-inch gravity sewer line that will convey wastewater generated at the WTP to an existing County sewer manhole in West Alu Road located approximately 580 feet east of the new WTP driveway. During the County's building and grading permit application

process, permit construction plans will be routed to your department for review and approval.

6. There are no kitchen facilities proposed. There is a break room proposed with only a sink and refrigerator with no cooking equipment. The potential for discharge of FOGs (fats, oils, and grease) into the sanitary sewer system is negligible. Any pretreatment requirements such as a grease trap for the sink will be assessed accordingly during the final building plans permit review processing stage.

7. Facility designs will prevent non-contact cooling water and condensate from draining into the wastewater system.

8. We acknowledge that your Solid Waste Division has no comments to offer at this time.

We appreciate your participation in the Chapter 343, Hawaii Revised Statutes (HRS) review process and will include a copy of your department's response letter in the Final EA. Should you have any questions or require further information regarding the proposed action, please contact me at (808) 983-1233.

Very truly yours,

Tessa Ng

Tessa Munekiyo Ng, AICP
Vice President

TMN:la
cc: Tom Ochwat, County of Maui, Department of Water Supply
Ivan Nakatsuka, Austin, Tsutsumi & Associates, Inc.
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APPENDIX A.

Preliminary Engineering Report

PRELIMINARY ENGINEERING REPORT FOR THE IAO SURFACE WATER TREATMENT PLANT UPGRADES PROJECT

WAILUKU, MAUI, HAWAI'I
TMK: (2) 3-5-001: 067 (POR.) & 091 (POR.)

June 18, 2015

Prepared for:

County of Maui Dept. of Water Supply
200 South High St, 5th Floor
Wailuku, HI 96793

Prepared by:

Austin, Tsutsumi & Associates, Inc.
Civil Engineers • Surveyors
1871 Wili Pa Loop, Suite A
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Honolulu • Wailuku • Hilo, Hawai'i

PRELIMINARY ENGINEERING REPORT FOR THE IAO SURFACE WATER TREATMENT PLANT UPGRADES PROJECT

Wailuku, Maui, Hawai'i

TMK: (2) 3-5-001: 067 (POR.) & 091 (POR.)

Prepared for:

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Civil Engineers • Surveyors

Honolulu • Wailuku • Hilo, Hawaii

June 18, 2015

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AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

TERRANCE S. ARASHIRO, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.
ADRIENNE W. L. H. WONG, P.E., LEED AP
DEANNA HAYASHI, P.E.
PAUL K. ARITA, P.E.
ERIK S. KANESHIRO, L.P.L.S, LEED AP

PRELIMINARY ENGINEERING REPORT FOR

3.2 MGD IAO SURFACE WATER TREATMENT PLANT UPGRADES

Wailuku, Maui, Hawaii

I. INTRODUCTION

The County of Maui Department of Water Supply (DWS) is proposing to replace the existing Iao Surface Water Treatment Plant (WTP) located within the site of the 3.0 MG Iao Tank with a new 3.2 million gallon per day (mgd) WTP to be located west (mauka) of the existing WTP. The site for the new WTP will be on land currently owned by Kehalani Mauka, LLC, Lot T-1 (TMK: (2) 3-5-001:067), adjacent to and mauka of the existing Maui Electric Co., Ltd. Substation. (Refer to Exhibit 1 for Location and Vicinity Map, and Exhibits 2 and 3 for General Site Plans).

Raw water for the WTP will continue to be from the Iao-Waikapu Ditch owned by Wailuku Water Company, LLC (WWC). An agreement between DWS and WWC allows for DWS to withdraw up to 3,200,000 gallons of water over a 24-hour period from the Iao-Waikapu Ditch for a fixed transportation fee of $0.48 per thousand gallons delivered. This amount of water withdrawn from the ditch is exclusive of backwash water from the treatment process, as long as such backwash water is placed back into WWC's water system. Therefore, the new WTP will treat approximately 3.4 mgd of raw water from the ditch to produce 3.2 mgd of treated water. The difference between the raw water and treated water of approximately 200,000 gpd is the water that will be used for daily multiple backwashing, and to a lesser degree occasional chemical cleaning, of the membranes. This membrane backwashing and cleaning water will be placed back into WWC's water system by ultimately being discharged into WWC's Waihee Ditch, which runs just below the 3.0 MG Iao Tank.

REPLY TO:
501 SUMNER STREET, SUITE 521 • HONOLULU, HAWAII 96817-5031
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OFFICES IN:
HONOLULU, HAWAII
WAILUKU, MAUI, HAWAII
HILO, HAWAII

The three high pressure membrane filtration units of the existing WTP were originally housed within a temporary structure that has since been removed. Therefore, these existing units are now in the open and exposed to the elements. The new WTP will consist of four low pressure membrane filtration units housed within a permanent structure.

II. CHARACTERISTICS OF PROJECT AREA

A. Climate

The average annual rainfall in the vicinity of Wailuku is approximately 37 inches per year, with 90% of the annual rainfall occurring between October and May. Prevailing tradewinds are from the northeast approximately 80-85% of the time, averaging 10-15 miles per hour during the afternoons with lighter winds during the mornings and nights. The average annual temperature is approximately 76 degrees Fahrenheit, with the high and low temperatures near 88 degrees and 63 degrees, respectively.

B. Topography

The existing ground at the WTP is sloped in the west to east (mauka to makai) direction, with approximate ground mean sea level (msl) elevations being 560' at the upper end and 508' at the lower end. The project site is undeveloped and overgrown with weeds and grasses, low-lying brush and trees.

C. Soils

A foundation investigation was conducted for the project site, whereby seven borings were drilled, ranging in depth from 15 to 25 feet. Neither seepage nor groundwater was encountered in any of the borings of the foundation investigation.

It was determined that the surface soil consisted of dark reddish brown to brown clayey silt of medium stiff to stiff condition, with only a slight expansion potential. Underlying the surface soil at depths ranging from 8 to 12 feet was mottled brown clayey silt with completely weathered rock fragment of medium stiff to stiff condition. This type of soil extended down to the maximum depths drilled, except for within one of the borings. Underlying this layer in this one boring at a depth of about 21 feet was highly to completely weathered rock of dense to medium hard condition.

Based on this investigation, it was determined that conventional shallow foundations may be used to support the proposed structures for the WTP.

D. Earthquake

Based on the 1997 Uniform Building Code, the WTP site is located within Seismic Zone 2B. Within Seismic Zone 2B, a seismic factor (Z) equal to 0.2 is recommended for calculation of shear and lateral load imparted on structures during an earthquake

E. Drainage

Site runoff drains as sheet flow west to east (mauka to makai), as there are no drainage ways or areas of concentrated flow. Normally most runoff is infiltrated into the open field land, but during intense storm events, runoff may reach and enter the Waihee Ditch, located approximately 600 feet makai of the project site.

The mountainous off-site land above West Alu Road also contributes runoff to the project site. This off-site runoff is intercepted by a roadside ditch on the mauka side of West Alu Road. The ditch runoff is eventually collected by a 36-inch culvert, which conveys the runoff under the roadway and into the project site, where it disperses into the open field land. Also, off-site runoff to the northwest sheet flows off West Alu Road and into the site.

F. Noise

As the site is currently undeveloped, there is no noise being generated by any on-site equipment or vehicles. However, upon completion of the project, there will be noise generated from equipment within the Treatment Plant Building (TPB), particularly from compressors, blowers and the standby generator. These equipment items will be housed within sound attenuated rooms within the TPB such that applicable State Department of Health day-time noise limits at the WTP property lines are met for the generator and night-time noise limits are met for the compressor and blower.

III. EXISTING WATER SYSTEM

A. Source Water and Ditch Intake

The source water for the WTP is the from the watershed area draining into the upper reaches of Iao Stream. There is a ditch intake in Iao Stream, near Iao Valley State Park, that diverts stream water into Iao Ditch. Shortly downstream of the Iao Ditch intake, the ditch divides into two ditches. The Iao-Maniania Ditch flows north towards Waiehu, and the Iao-Waikapu Ditch flows south towards Maalaea. Near where the Iao-Waikapu Ditch crosses Alu Road, an intake diverts water from the ditch into the raw water transmission line that conveys the water to the Iao WTP.

The intake at the Iao-Waikapu Ditch consists of two manually-cleaned screens that are accessible through steel plate hatches. The screened water (raw water) enters a concrete box and exits the box through a 12" pipe with a 12" flow meter, 12" gate valve and air release valve. The elevation at the ditch is approximately 740'. (Refer to Photos 1 and 2.)

B. Raw Water Transmission Line

The first segment of the transmission line out of the concrete box at the intake is about 800' long. The end of this segment is where the water is discharged into a 3,000± gallon headbreaker tank (HBT) at elevation 617'. The differential elevation between the HBT and existing WTP allows for an inlet pressure at the WTP that is conducive towards operation of the membrane units of the existing WTP. (Refer to Photo 3.)

A little more than half of this first segment of the transmission line is 12" in size, before it increases in size to 24". The transmission line then reduces back down to 12" just before the HBT inlet, which has a 12" gate valve and 12" float control valve. The float valve regulates the discharge of water into the HBT. The differential between the open and close positions of the float is only a few inches.

The HBT outlet is initially 12" in size, with a 12" gate valve, but quickly increases back to 24" in size all the way to the existing WTP. There is no line with valve that connects the HBT inlet to its outlet. Therefore, bypassing of the HBT is not possible.

C. Water Treatment Plant

The major components of the existing treatment plant are three un-sheltered high pressure membrane filtration units with clean-in-place chemical system, a blower and compressor housed within a wooden shelter, an un-sheltered compressed air tank adjacent to this wooden shelter and a wooden building that serves as an office and laboratory. Disinfection is with chlorine gas. (Refer to Photos 4 and 5.)

IV. PROPOSED UPGRADES

The existing Iao Surface WTP located within the site of the 3.0 MG Iao Tank will be replaced with a new 3.2 mgd WTP to be located west (mauka) of the existing WTP. The new WTP will consist of four low pressure membrane filtration units housed within a permanent structure. There is no intention of the expanding the WTP beyond the currently designed 3.2 mgd average production rate. Therefore, there is no room for expansion of the WTP in the future to increase the plant output capacity. The construction cost for the new WTP is expected to be in the range of $12-15 million.

Raw water for the WTP will continue to be from the Iao-Waikapu Ditch. A new connection to the existing 24" raw waterline will be made to convey the raw water to the new WTP. The raw water will pass through a strainer to remove debris prior to the water entering the membrane units. After the water leaves the membrane units, the filtered water will be injected with chlorine prior to entering the chlorine contact tank (CCT) for disinfection. The finished water will flow by gravity from the CCT to the existing Iao 3.0 MG Tank.

A sample of the raw water, before it goes through the strainer, will be measured for turbidity. In the event that the turbidity of the raw water is too high to treat, a valve on the raw water line to the membrane units will automatically close, and a valve on a by-pass line will automatically open, allowing the high turbidity water to be conveyed to the new Sludge Lagoons, rather than have the raw water be treated. (Refer to Exhibit 4 for the Process Schematic.) The raw water will continue to be monitored for turbidity, and when the turbidity meets a pre-determined acceptable level, the automatic valve on the by-pass line will close the valve on the line to the membrane units will open, allowing the raw water to be treated.

The basic design criteria for the WTP are shown in Table 1, and the chemical usage design criteria are shown in Table 2.

Table 1. Basic Design Criteria

PARAMETER	VALUE	UNITS
PLANT PRODUCTION		
NUMBER OF MEMBRANE UNITS	4	EACH
AVE. PRODUCTION RATE PER MEMBRANE UNIT	1.2	MGD
MAX. PRODUCTION RATE PER MEMBRANE UNIT	1.6	MGD
AVERAGE PLANT PRODUCTION RATE	3.2	MGD
NUMBER OF MODULES PER UNIT	108	EACH
STRAINERS		
AUTOMATIC SELF CLEANING STRAINER		
NUMBER OF STRAINERS	2	EACH
CAPACITY, EACH	4800	GPM
SIZE	14	INCHES
HORSEPOWER, BACKWASH ARM	1/4	HP
CLEAN-IN-PLACE (CIP) SYSTEM		
CIP TANK		
NUMBER OF TANKS	1	EACH
VOLUME OF TANK	1800	GALLONS
CIP HEATER	60	KW
CIP PUMP		
NUMBER OF PUMPS	1	EACH
CAPACITY	720	GPM
TOTAL DYNAMIC HEAD	40	FT
HORSEPOWER	15	HP
NEUTRALIZATION TANK		
NUMBER OF TANKS	1	EACH
VOLUME OF TANK	5800	GALLONS
NEUTRALIZATION PUMPS		
NUMBER OF PUMPS	1	EACH
CAPACITY, EACH PUMP	120	GPM
TOTAL DYNAMIC HEAD	50	FT
HORSEPOWER, EACH PUMP	3	HP
AIR BLOWERS		
NUMBER OF BLOWERS	3	EACH
AIR FLOW, EACH BLOWER (@ 5 PSIG)	275	SCFM
HORSEPOWER, EACH BLOWER	20	HP
AIR COMPRESSORS		
NUMBER OF COMPRESSORS	2	EACH
AIR FLOW, EACH COMPRESSOR (@ 115 PSIG)	36.5	SCFM
HORSEPOWER, EACH COMPRESSOR	7.5	HP
AIR RECEIVERS		
CONTROL AIR RECEIVER TANK CAPACITY	120	GAL
TEST AIR RECEIVER TANK CAPACITY	620	GAL
CHLORINE CONTACT TANK		
VOLUME (AT OVERFLOW)	270,000	GALLONS
SLUDGE LAGOONS		
NUMBER OF CELLS	2	EA
VOLUME, EACH CELL	135,000	GAL

Table 2. Chemical Usage Design Criteria

PARAMETER	VALUE	UNITS
SODIUM HYPOCHLORITE (NAOCL) 12.5% SOLUTION		
MEMBRANES MAINTENANCE WASH		
TARGET DOSAGE (12.5% SOLUTION)	100	PPM
USAGE PER CLEAN PER UNIT	1.0	GAL
MAINTENANCE WASH INTERVAL	48	HOURS
CLEAN IN PLACE		
TARGET DOSAGE (12.5% SOLUTION)	500	PPM
USAGE PER CLEAN PER UNIT	5.1	GAL
CIP INTERVAL	30	DAYS
TOTAL USAGE PER YEAR (MEMBRANES)	1000	GAL
DISINFECTION		
TARGET DOSAGE (12.5% SOLUTION)	2.33	PPM
TARGET RESIDUAL	1.30	PPM
TOTAL USAGE PER YEAR (DISINFECTION)	21,800	GAL
OVERALL TOTAL USAGE PER YEAR	22,800	GAL
CITRIC ACID 50% SOLUTION		
CLEAN IN PLACE		
USAGE PER CLEAN PER UNIT	25	GAL
CIP INTERVAL	30	DAYS
TOTAL USAGE PER YEAR	1220	GAL
SULFURIC ACID (H2S04) 50% SOLUTION		
MAINTENACE WASH		
USAGE PER CLEAN PER UNIT	1.3	GAL
MAINTENANCE WASH INTERVAL	48	HOURS
CLEAN IN PLACE		
USAGE PER CLEAN PER UNIT	1.3	GAL
CIP INTERVAL	30	DAYS
TOTAL USAGE PER YEAR	1040	GAL
SODIUM HYDROXIDE (NAOH) 50% SOLUTION FOR NEUTRALIZATION		
MAINTENACE WASH		
USAGE PER CLEAN PER UNIT	1.0	GAL
MAINTENANCE WASH INTERVAL	48	HOURS
CLEAN IN PLACE		
USAGE PER CLEAN PER UNIT	18	GAL
CIP INTERVAL	30	DAYS
TOTAL USAGE PER YEAR	1580	GAL
SODIUM BISULFITE (NAHSO3) 38% SOLUTION FOR NEUTRALIZATION		
MAINTENACE WASH		
USAGE PER CLEAN PER UNIT	0.4	GAL
MAINTENANCE WASH INTERVAL	48	HOURS
CLEAN IN PLACE		
USAGE PER CLEAN PER UNIT	2.1	GAL
CIP INTERVAL	30	DAYS
TOTAL USAGE PER YEAR	410	GAL

NOTE: QUANITIES BASED ON AVERAGE RAW WATER FLOW OF 3.2 MGD WITH 4 UNITS OPERATING

A. Major On-site Components

This section describes the major components within the 2.5-acre fenced site of the new surface water treatment plant (WTP). (Refer to Exhibit 5 for WTP Site Plan.)

1. Treatment Plant Building

A 140' long x 70' wide x 28' high (at its highest point above finished grade) pre-engineered rigid-frame Treatment Plant Building (TPB) with lower wall portions of concrete masonry unit (CMU) and upper wall portions and roof of aluminum panels. The finish floor elevations of the lower Filtration Area and the multiple rooms of the upper area will vary to conform to the slope of the site. (Refer to Exhibits 6, 7, 8 and 9 for TPB floor plan and elevation views.)

The lower "Filtration Area" of the TPB will house the following major components:

- Two low-differential pressure, automatic backwashing strainers (one acting as a standby), to remove particles from the raw water that may damage the membranes.
- Two pressure reducing valves to reduce the pressure of the raw water that would otherwise damage the membranes. A pressure relief valve will be installed downstream of the pressure reducing valves as a safety feature to protect the membrane units in the event that the pressure reducing valves malfunction.
- Four low pressure membrane filtration units.
- Clean-In-Place (CIP) system used for cleaning the membranes, with CIP and Neutralization Tanks/Pumps, chemical drums and chemical dosing pumps.

- Sodium hypochlorite system with storage tank and metering pump assemblies. Sodium hypochlorite will primarily be used for disinfection and for cleaning of the membranes. The sodium hypochlorite will also be used to improve the quality of the raw water prior to filtration, if needed.

The upper area of the TPB will have the following separate rooms, with all of the rooms being air conditioned except for the Generator and Blower Rooms:

- Generator Room (sound attenuated) to house the standby generator and diesel fuel day tank
- Blower Room (sound attenuated) to house air blowers, air compressors and air receivers
- Electrical Room to house the motor control center
- Office/Laboratory
- Break Room
- Unisex restroom
- Storage Room

2. Fuel Tank

An aboveground, 2,000-gallon, double-containment, fuel tank for storage of diesel fuel to run the standby generator.

3. Chlorine Contact Tank

An aboveground concrete Chlorine Contact Tank (CCT) of dimensions 102' long x 24' wide x 15' high (at its highest point above finished grade) with a maximum water depth of 18' feet. The CCT will have

an interior longitudinal wall with an opening at one end. This will allow for serpentine flow from the inlet to the outlet to minimize short circuiting of the flow, thereby maximizing the contact time within the CCT. (Refer to Exhibit 10 for Chlorine Contact Tank Piping Plan and Sections, and Appendix A for Chlorine Contact Time Calculations.)

4. Sludge Lagoon

A dual-compartment concrete Sludge Lagoon of dimensions 164' long x 30' wide with a maximum water depth of 14 feet for gravity solids-liquid separation of backwash water from the membrane units. High turbidity raw water, drain water from the raw water strainers, discharge from the raw water pressure relief valve and overflows from the CIP and Neutralization Tanks will also be conveyed to the Sludge Lagoons. (Refer to Exhibit 11 for Sludge Lagoon Plan and Sections.)

Each of the two compartments of the Sludge Lagoon will have an approximate volume of 136,000 gallons. One compartment will be shut-down at a time to allow for gravity settlement of the sludge.

The decanted liquid will discharge into the Waihee Ditch, for which an NPDES permit will be required, and the sludge would then be allowed to dry via evaporation within the Sludge Lagoons. When the sludge dries to a solids content of approximately 35 percent, the dried sludge will be removed from the compartment, and transported for off-site disposal at the County of Maui landfill.

B. Membrane Filtration System

1. General

The WTP will utilize a low pressure microfiltration system with polyvinylidene fluoride (PVDF) membranes that are resistant to chlorine. This membrane system will be designed to produce water that meets or exceeds all water quality requirements of the State of Hawaii Department of

Health (DOH) and the United States Environmental Protection Agency (EPA).

2. Membrane units

Four Memcor CP membrane units will be installed which will allow the WTP to produce an average of 3.2 mgd with three units in operation and one unit on standby.

The membrane units are composed of 108 membrane modules, with the capability of expanding up to 120 modules. However, there is no intention of expanding the WTP in the future beyond the currently designed average production rate of 3.2 mgd.

The Memcor CP filtration unit is a pre-engineered system that is factory assembly and skid mounted. The package comes in two parts; (1) a membrane array with its own frame, and (2) a valve, pipework and instrumentation skid supplied in a supporting frame. The two parts put together measure approximately 19 feet long by 12 feet high by 7 feet wide.

3. Membranes

For the Iao WTP, Memcor's N Series membranes will be used, which are composed of PVDF and are resistant to chlorine. A pilot study was recently conducted at the existing Kamole Weir WTP which involved testing Memcor's V Series membranes in their L10V modules and their N Series membranes in their L10N modules. The intention is to have the Department of Health approve the N Series membranes for both the L10N and L20N membrane modules based on the results of the pilot study.

The main difference between the L10N and L20N membrane modules is the height of the modules. The L10N modules are 45.5 inches tall, while the L20N modules are 70.9 inches tall. The L20N modules are being proposed for the Iao WTP, since L20N modules are used for systems

designed with flow rates greater than 0.5 mgd per membrane unit.. The L10N modules are utilized on small range pre-engineered Memcor skids.

The N Series membranes are stronger and more permeable than previous membranes, including the V Series membranes. The advantages of the N Series membranes are:

- Reduction in fiber repair rates
- Significant improvement in resistance to abrasion
- 20% greater permeability
- 15% higher operating flux rate on average
- Lower fouling rate
- Improved CIP recovery

The expectation for a L20N membrane module life is seven to ten year if properly maintained. The estimated replacement costs for the L20N module would be approximately $1,200.

4. Flux

Flux is a measure of the rate at which the treated water passes through the membrane per unit of outside surface area of membrane. The design flux rate will be 35-40 gallons per square foot per day (gfd). The maximum flux rate would be 60 gfd, which is expected to be the highest flux rate approved by DOH. The nominal membrane area per L20N module is 375 square feet (sf).

5. Backwash

Over time, particles rejected by the filtering action of the membranes will build up on the outside of each fiber. As a result, the resistance to flow will increase until a backwash is performed. The backwash sequence will remove the build-up of solids and restore the resistance to filtration flow. A

backwash can either be initiated after a pre-set period of time or when the resistance to flow reaches a pre-determined set point.

The backwash is a physical process that uses a low-pressure air scour and air-assisted liquid backwash to remove accumulated particles – no chemicals are used during the backwash. The backwash usually lasts 3 to 4 minutes and occurs at an interval of 15 to 60 minutes, depending on the feed water characteristics. No filtrate backwash pumps are required. The backwash waste from the process discharges into the Sludge Lagoons.

Based on past experience with the existing Iao WTP, the average backwash interval is expected to be 30 minutes. However, during high turbidity events the interval is expected to be less. The estimated backwash waste volume, based on four units operating, is approximately 130,000 gpd. This amount includes backwash that occurs for each maintenance wash and CIP (which are discussed in following sections.)

6. Maintenance Wash

The maintenance wash procedure will be used to extend the time between Clean-in-Place (CIP) chemical cleans, as described in the following section. The frequency for a maintenance wash is expected to be 48 hours for chlorine and 48 hours for acid.

The maintenance wash sequence is a short-cycle chemical membrane clean, which uses a chlorine solution and citric acid or sulfuric acid. One wash would use chlorine, and the other wash would most likely use sulfuric acid, which is less expensive and requires fewer chemicals than washing with citric acid. Maintenance washes can occur automatically, or be initiated by an operator.

The maintenance wash sequence involves the following steps:

- CIP Tank Fill – the CIP tank is filled from one of the units in operation or from the common filtrate piping header. This step

is performed in preparation of conducting a maintenance wash and does not require a unit to be removed from operation.

- Backwash - The unit is backwashed to remove excess solids and maximize the chemical cleaning efficiency. The backwash waste is drained to the regular waste outlet.

- Hot Water Fill - The unit is filled with water from the CIP tank.

- Filtrate Recirculation and Chemical Dosing - The CIP transfer/recirculation pump starts to recirculate the water to the unit in a closed loop. The unit is fully isolated from the rest of the system. Acid or chlorine (as sodium hypochlorite) is added in the loop at the beginning of the recirculation sequence until the appropriate quantity of cleaning chemical is added.

- Recirculation – The cleaning solution is recirculated through the membranes.

- Soak - The modules are left to soak for a pre-set time.

- The cleaning solution is drained away from the unit to the neutralization system.

- Chemical Rinses - The unit is refilled with feed water and rinsed to remove residual chemical. All rinse water is directed to the neutralization system.

- Filtration to Waste – The unit is put into filtration but the filtrate with chemical residue is sent to drain or the neutralization system.

The complete maintenance wash sequence usually takes 45 minutes. However, shorter or longer maintenance wash sequences can be enabled if deemed necessary. The estimated waste associated with

maintenance washes, based on four units operating, is approximately 28,000 gpd.

7. Clean-In-Place (CIP)

The CIP sequence will be used to maintain long-term membrane performance. The CIP sequence is usually initiated based on time, but can also be based on transmembrane pressure, resistance or the volume being filtered by the membranes. The time between CIP cleans is expected to be 30 days. The CIP sequence is similar to the maintenance wash, but with longer recirculation and soak sequences, and utilization of filtered water heated to a set temperature. In addition, the CIP sequence includes two sequential chemical cleanings. The first clean would be with citric acid and sulfuric acid together, and the second clean would be with chlorine.

The second cleaning regime uses chlorine typically containing 200 to 500 parts per million of free chlorine. For chlorine cleans, the sequence is similar to that of the maintenance wash, but with a longer duration of approximately 2 hours. The entire CIP cleaning process, using both citric/sulfuric acid and chlorine, takes approximately 8 hours. The estimated waste associated with the CIP cleaning process, based on four units operating, is approximately 1,900 gpd However, it should be noted that this is based on an average over a 30-day CIP interval, and is not a daily waste flow. The waste per each CIP clean is approximately 14,000 gallons.

8. Chemical Neutralization

Upon completion of a maintenance wash or CIP sequence, the dilute chemical solution from the unit is transferred to the neutralization tank. Neutralization is a fully automated batch process which occurs at the conclusion of either a CIP or maintenance wash.

A level sensor in the neutralization tank signals the start of the neutralization pump which creates a circulation loop. Sodium bisulfite will

be used for chlorine neutralization and sodium hydroxide for acid neutralization. The neutralization pump continues to run, turning over the tank through mixing eductors until a neutral condition is detected. Upon detecting a neutral condition, the tank contents will flow by gravity to the Sludge Lagoons.

9. Pressure Decay Test (PDT)

The PDT will be used to confirm the integrity of the membrane fibers. The test includes filtering to the backwash level (top of the modules), pressurizing the inside of the module fibers and header with air at 15 psig, isolating the cell from the air supply and monitoring the pressure decay over a period of time (typically 2 to 3 minutes.) The test confirms integrity of the membranes based on the rate of pressure decay. Each unit would be tested at regular time intervals, usually every 24 hours, adjustable by the operator.

10. Air Leak Test

If the PDT returns an alarm, the Air Leak Test would be used to assist in determining in which module the integrity loss has occurred. The faulty module can easily be isolated using a specially designed tool and removed from the unit. The isolation does not require the membrane unit to be drained or shutdown. The individual membrane fiber with the leak can then be found and "pinned", which involves inserting a long metal pin into the membrane to plug the membrane. The module with the pinned membrane is then put back into the unit and into operation.

C. Chemical Systems

1. Sodium Hypochlorite

Sodium hypochlorite will be used for cleaning the membranes during maintenance washes and during the CIP process. A duplex metering pump assembly (one duty pump, one standby pump) will pump the

sodium hypochlorite to an injection port on the CIP pump discharge line to accomplish these membrane cleaning processes.

Sodium hypochlorite will also be used for disinfection through injection into the filtered water to produce the finish water after achieving sufficient contact time within the Chlorine Contact Tank. A duplex metering pump assembly (one duty pump, one standby pump) will pump the sodium hypochlorite to the primary point of injection into the filtrate water line for disinfection. A third duplex pump assembly will be installed. One of the pumps of this assembly will pump the sodium hypochlorite to an injection port for injection into the raw water prior to the strainers to improve the quality of the raw water prior to filtration, if needed. The second pump will pump the sodium hypochlorite to an injection port into the finish water, if needed to increase its chlorine concentration before leaving the WTP.

As the amount of sodium hypochlorite to achieve these multiple functions is significantly more than the amount of chemicals to be used for just cleaning of the membranes, the sodium hypochlorite will be stored in a 1,000-gallon tank with an integral spill containment feature in the Filtration Area of the Treatment Plant Building (TPB). Filling of this tank will be through an outdoor fill connection just on the other side of the TPB wall from the tank.

2. Citric Acid

Citric acid will be used for cleaning the membranes during the CIP process. The solution will be stored in a 55-gallon drum situated over a secondary containment compartment in the Filtration Area of the TPB. A single, panel-mounted, air diaphragm pump will pump the citric acid to an injection port on the CIP pump discharge line.

3. Sulfuric Acid

Sulfuric acid will be used for cleaning the membranes during maintenance washes, and will be used with citric acid during the CIP process. The sulfuric acid will be stored in a 55-gallon drum situated over a secondary containment compartment in the Filtration Area of the TPB. A single, panel-mounted, air diaphragm pump will pump the sulfuric acid to an injection port on the CIP pump discharge line.

4. Sodium Hydroxide

Sodium hydroxide will be used to neutralize (increase the pH to approximately 7) the citric and sulfuric acids. The sodium hydroxide will be stored in a 55-gallon drum situated over a secondary containment compartment in the Filtration Area of the TPB. A single, panel-mounted, air diaphragm pump will be used to pump the sodium hydroxide to the injection port on the CIP neutralization pipe.

5. Sodium Bisulfite

Sodium bisulfite will be used to neutralize (de-chlorinate) the chlorinated water used for cleaning of the membranes. The sodium bisulfite will be stored in a 55-gallon drum situated over a secondary containment compartment in the Filtration Area of the TPB. A single, panel-mounted, air diaphragm pump will be used to pump the sodium bisulfite to the injection port on the CIP neutralization pipe.

6. Alternative Chemicals

The chemicals described above are intended to be the chemicals used at the Iao WTP. However, after the new WTP has been in operation for a while, experience may show that different chemicals may work better for cleaning the membranes. In lieu of using citric acid for cleaning, other options would be phosphoric acid or hydrochloric acid.

D. Wastewater System

Wastewater generated from the restroom, lunchroom and office/laboratory, and water from floor drains throughout the Filtration Area of the Treatment Plant Building will connect to an on-site 6" gravity line with cleanouts that transitions into an off-site 8" gravity line with manholes. This 8" gravity line will convey the wastewater to a discharge point into an existing sewer manhole along West Alu Road. (Refer to Exhibit 2.)

E. Service Waterline

A 12-inch service waterline will tap into DWS's 12-inch main in West Alu Road to provide service water to the WTP. The service line will provide source water for the WTP plumbing fixtures, washdown facilities, etc. The service line will also provide for fire protection for the WTP via an on-site fire hydrant. (Refer to Exhibits 2 and 5.)

F. Monitoring and Recording Equipment

All monitoring and recording equipment, with the exception of flow meters, will be installed within the Office/Laboratory within the Treatment Plant Building. Table 3 summarizes the parameters to be measured:

Table 3. Summary of Measured Parameters

Parameter	Location	No. of Sampling Points or Instruments
Turbidity	Raw Water (before strainers)	1
	Individual Filtered Water*	4
	Combined Filtered Water (before chlorine injection)	1
	Finish Water (compliance monitoring point)	1
Chlorine Residual (including pH and Temperature)	Raw Water (after strainers and chlorine injection)	1
	Combined Filtered Water (after chlorine injection)	1
	Finish Water (compliance monitoring point)	1
pH	CIP Line	1
	Neutralized Waste	1
ORP	CIP Line	1
	Neutralized Waste	1
Temperature	CIP Line	1
Flow	Raw Water	1
	Combined Filtered Water (before chlorine injection)	1
	Finish Water (compliance monitoring point)	1
	Raw Water High Turbidity Flush Line	1

*For each membrane filtration unit

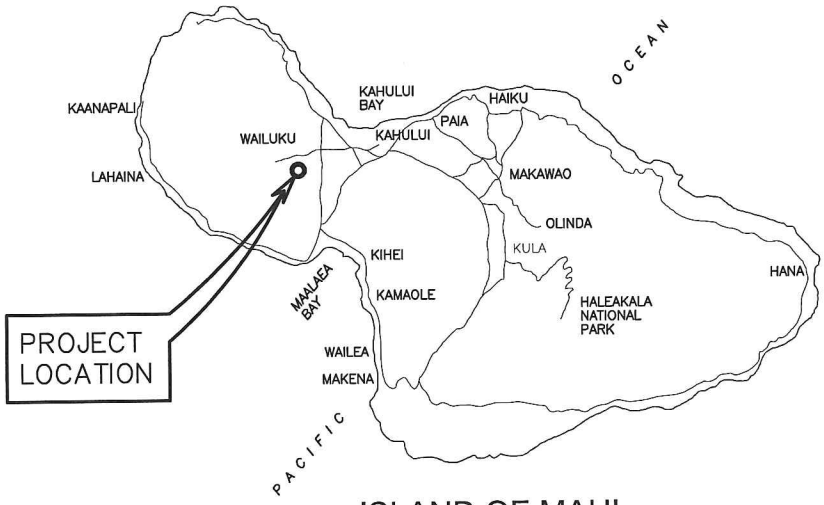
G. Electrical

The WTP will require at least one (1) new Maui Electric Co., Ltd. (Meco) pole to cross West Alu Road via overhead conductors. A riser from the last pole will convert to an underground feed to a new Meco pad-mounted transformer. This transformer will provide underground electrical service rated at 480Y/120V, 3-phase, 4-wire to a switchgear contained inside the Electrical Room of the Treatment Plant Building. All electrical loads will be fed from this point throughout the facility. A standby generator will automatically start-up to provide full back-up power in the event of a utility outage.

H. Telephone

The telephone service for the new treatment building will utilize at least one (1) new Meco pole to cross West Alu Road via overhead conductors. A riser from the last pole will convert to an underground feed, possibly including a 2'x4' handhole, and terminate at a demarcation point within the Treatment Plant Building. The actual cabling requirement will be determined by the telephone company.

EXHIBITS

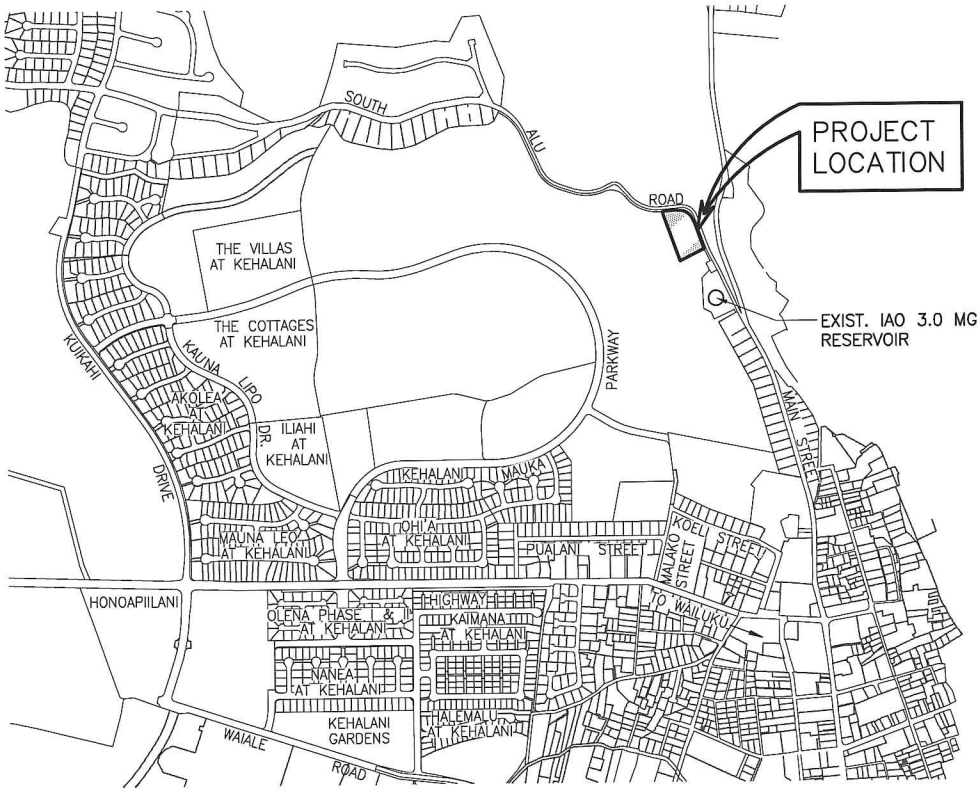


ISLAND OF MAUI

NORTH

LOCATION MAP

NOT TO SCALE



NORTH

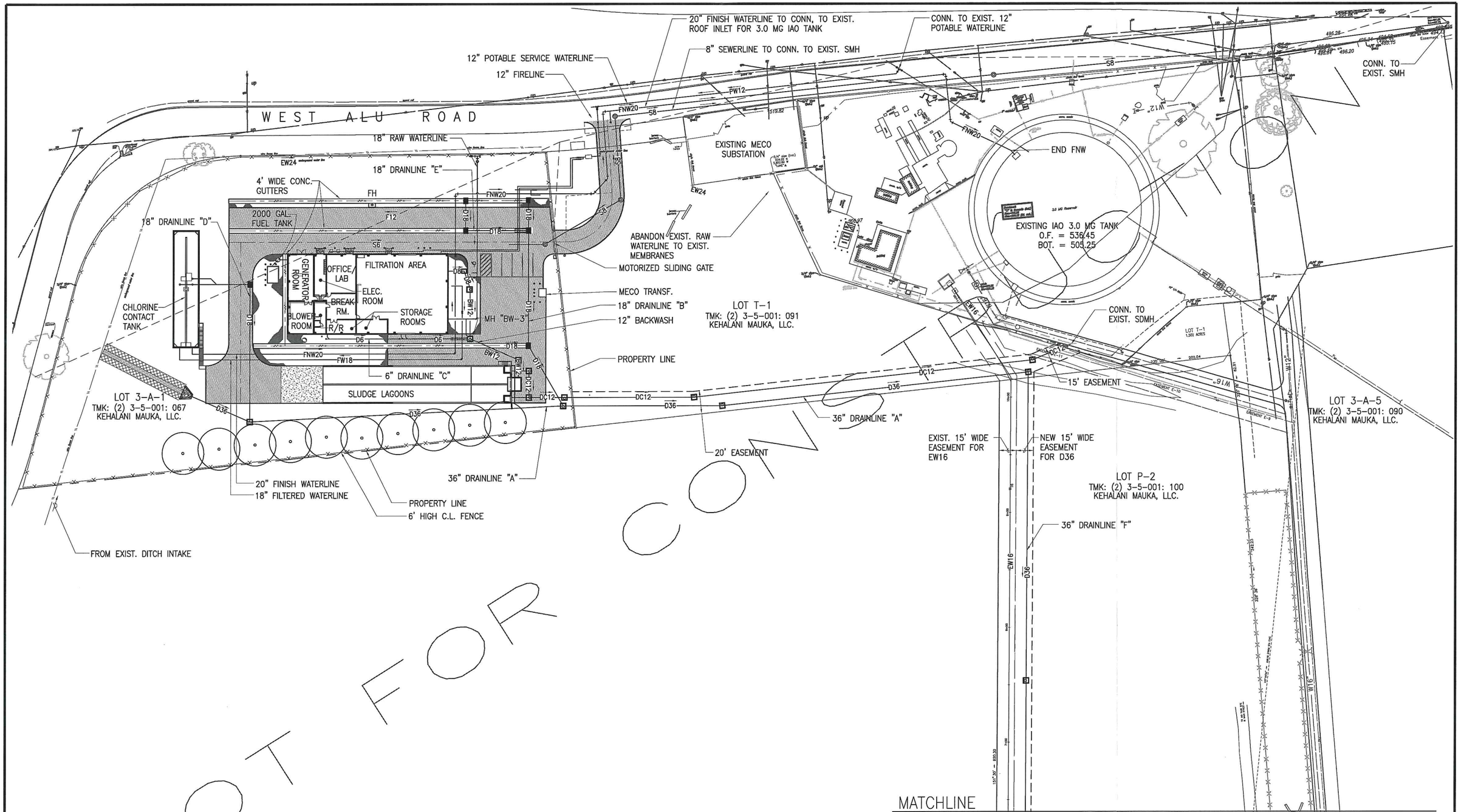
VICINITY MAP

NOT TO SCALE

PRELIMINARY ENGINEERING REPORT IAO SURFACE WATER TREATMENT PLANT UPGRADES WAILUKU, MAUI, HAWAI'I	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII LOCATION AND VICINITY MAP	EXHIBIT 1

NOVEMBER 2014

FILENAME: C:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\PER\EXHIBITS\EXH 1 - LOCATION MAP.DWG Nov 13, 2014-11:44 AM



NOT FOR CONSTRUCTION

GENERAL SITE PLAN – NORTH

SCALE: 1" = 80'

0 1

LINE IS 1 INCH AT FULL SIZE
(If NOT 1-inch : Scale Accordingly)

PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

GENERAL SITE PLAN – NORTH

EXHIBIT 2

FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 2-3 – C-1 – GENERAL SITE PLAN.DWG Jun 12, 2015-6:47 AM

JANUARY 2015

SEE EXHIBIT 2 FOR CONTINUATION
MATCHLINE

36" DRAINLINE "G"

EXIST. 15' WIDE EASEMENT FOR EW16

NEW 15' WIDE EASEMENT FOR D36

EW16

D36

EXIST. WAIHEE DITCH

EXIST. WAILUKU WELL NO. 1 SITE

S8"

ML/W12"

D48"

W12"

S10"

D54"

FUTURE KEHALANAI PARKWAY MAUKA LOOP (BY OTHERS)

CONNECT 36" DRAINLINE "G" TO FUTURE 54" DRAINLINE (BY OTHERS) IN ROAD

NORTH

GENERAL SITE PLAN – SOUTH

SCALE: 1" = 80'

0 1

LINE IS 1 INCH AT FULL SIZE
(If NOT 1-inch : Scale Accordingly)

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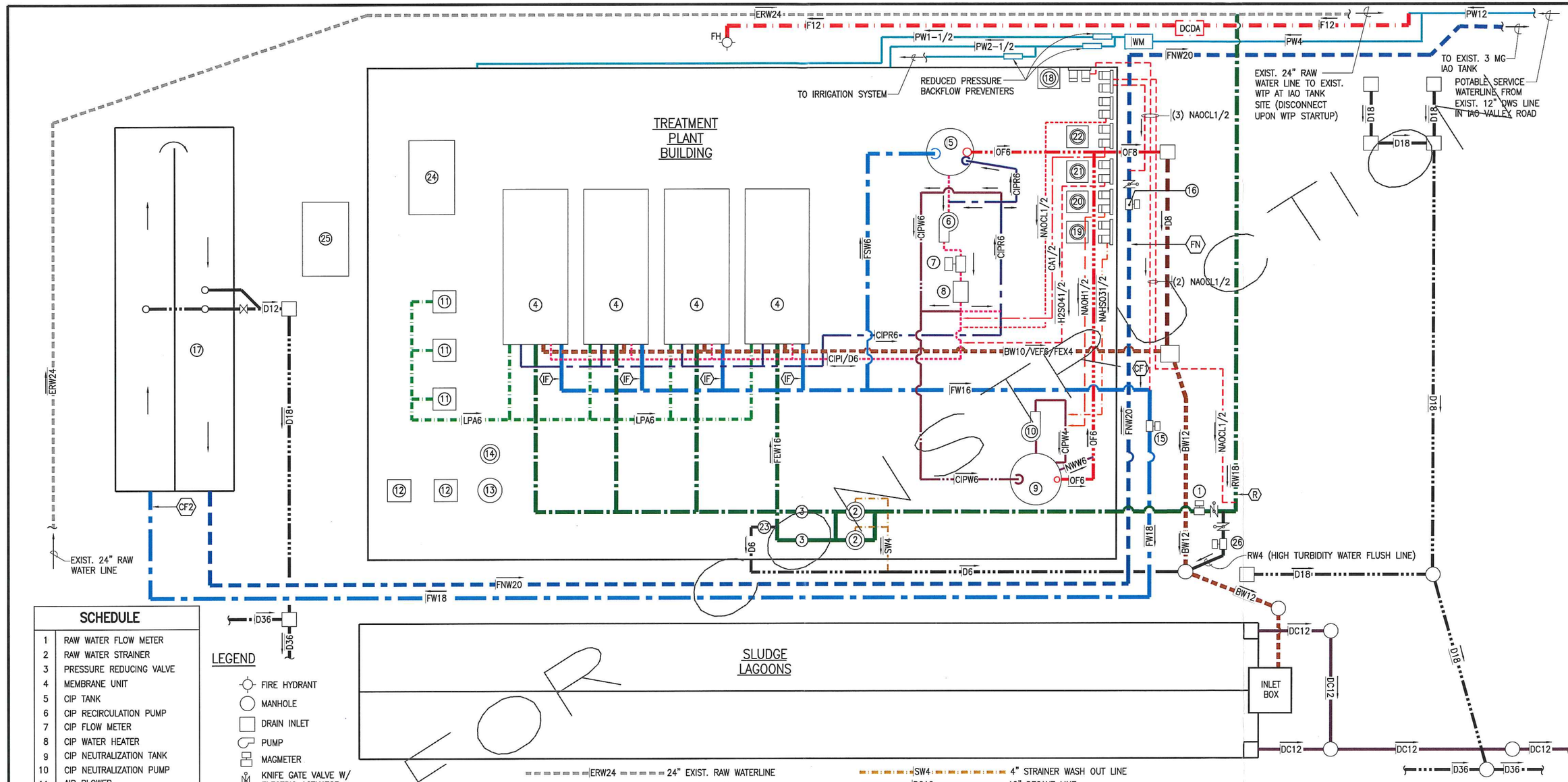
ENGINEERS,SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

GENERAL SITE PLAN – SOUTH

EXHIBIT
3

FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 2-3 – C-1 – GENERAL SITE PLAN.DWG Jun 12, 2015-6:47 AM

JANUARY 2015



SCHEDULE

1	RAW WATER FLOW METER
2	RAW WATER STRAINER
3	PRESSURE REDUCING VALVE
4	MEMBRANE UNIT
5	CIP TANK
6	CIP RECIRCULATION PUMP
7	CIP FLOW METER
8	CIP WATER HEATER
9	CIP NEUTRALIZATION TANK
10	CIP NEUTRALIZATION PUMP
11	AIR BLOWER
12	AIR COMPRESSOR
13	TEST AIR RECEIVER
14	CONTROL AIR RECEIVER
15	FILTERED WATER FLOW METER
16	FINISH WATER FLOW METER
17	CHLORINE CONTACT TANK
18	SODIUM HYPOCHLORITE TANK
19	SODIUM BISULFITE DRUM
20	SODIUM HYDROXIDE DRUM
21	SULFURIC ACID DRUM
22	CITRIC ACID DRUM
23	PRESSURE RELIEF VALVE
24	STANDBY GENERATOR
25	FUEL TANK
26	RAW WATER FLUSH FLOW METER

LEGEND

- FIRE HYDRANT
- MANHOLE
- DRAIN INLET
- PUMP
- MAGMETER
- KNIFE GATE VALVE W/ ELECTRIC ACTUATOR
- GATE VALVE
- DOSING ASSEMBLY PUMPS
- CHEMICAL DRUM
- PERISTALTIC PUMPS
- R — RAW WATER SAMPLING TAP FOR TURBIDITY
- IF — INDIVIDUAL FILTERED WATER SAMPLING TAP FOR TURBIDITY
- CF1 — COMBINED FILTERED WATER SAMPLING TAP FOR TURBIDITY BEFORE CHLORINE INJECTION
- CF2 — COMBINED FILTERED WATER SAMPLING TAP FOR CHLORINE RESIDUAL AFTER CHLORINE INJECTION
- FN — FINISH WATER SAMPLING TAP FOR TURBIDITY, PH/TEMPERATURE AND CHLORINE RESIDUAL (CT COMPLIANCE MONITORING POINT)

ABBREVIATIONS

WM	WATER METER
DCDA	DOUBLE-CHECK DETECTOR ASSEMBLY

ERW24	24" EXIST. RAW WATERLINE
RW18	18" RAW WATERLINE
FEW16	16" FEED WATERLINE
FNW20	20" FINISH WATERLINE
FW18	18" FILTERED WATERLINE
FSW6	6" FILTERED SERVICE WATERLINE
BW12	12" BACKWASH LINE
PW	POTABLE SERVICE WATERLINE (SIZE VARIES)
F12	12" FIRE LINE
CIPI/D6	6" CIP IN/DRAIN
CIPR6	6" CIP RETURN
CIPW6	6" CIP WASTE WATER LINE
OF6	6" OVERFLOW LINE
NWW6	6" NEUTRALIZED CIP WASTE WATER LINE
VEF6	6" VENT FEED
FEX4	4" FILTRATE EXHAUST

SW4	4" STRAINER WASH OUT LINE
DC12	12" DECANT LINE
D12	12" STORM DRAIN/DRAIN LINE
LPA6	6" LOW PRESSURE AIR LINE
NAHSO31/2	1/2" SODIUM BISULFITE LINE
NAOH1/2	1/2" SODIUM HYDROXIDE LINE
NAOCL1/2	1/2" SODIUM HYPHOCHLORITE LINE
CA1/2	1/2" CITRIC ACID LINE
H2SO41/2	1/2" SULFURIC ACID LINE

PROCESS SCHEMATIC

NOT TO SCALE

PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

PROCESS SCHEMATIC

EXHIBIT 4

FILENAME: C:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 4 - G-6 - PROCESS SCHEMATIC-COLOR.DWG Jun 12, 2015-6:48 AM

JANUARY 2015

LOT 5
TMK: (2) 3-5-001: 001
LEDERMAN BROTHERS
HAWAIIAN GROWTH VENTURES, LLC.

W E S T A L U R O A D

LOT T-1
TMK: (2) 3-5-001: 091
KEHALANI MAUKA, LLC.

LOT 3-A-1
TMK: (2) 3-5-001: 067
KEHALANI MAUKA, LLC.

EXISTING MECO SUBSTATION
TMK: (2) 3-5-001: 048
MAUI ELECTRIC CO., LTD.

DOUBLE-CHECK DETECTOR ASSEMBLY
REDUCED PRESSURE BACKFLOW PREVENTERS
WATER METER
ABANDON EXIST. RAW WATERLINE TO EXIST. MEMBRANES
DRIVEWAY A
CONCRETE CURB, TYP.
4' WIDE CONC. GUTTERS
MOTORIZED SLIDING GATE
GATE CONTROL STATION
GATE OPERATOR
MECO TRANSF.
CONC. HEADER
PROPERTY LINE
20'-0" EASEMENT
CHLORINE CONTACT TANK
2000 GAL. FUEL TANK
70' WTP BUILDING
GENERATOR ROOM
ELEC. ROOM (A/C)
OFFICE/LAB (A/C)
BREAK ROOM (A/C)
R/R
BLOWER ROOM
STORAGE
STORAGE
FILTRATION AREA
RAMP DOWN
RAMP DOWN
SLUDGE LAGOONS
4" GRAVEL FILL
REMOVE EXIST. WIRE FENCE LINE
6' HIGH C.L. FENCE
FROM EXIST DITCH INTAKE

WTP SITE PLAN

SCALE: 1" = 40'

NORTH

LINE IS 1 INCH AT FULL SIZE
(If NOT 1-Inch : Scale Accordingly)

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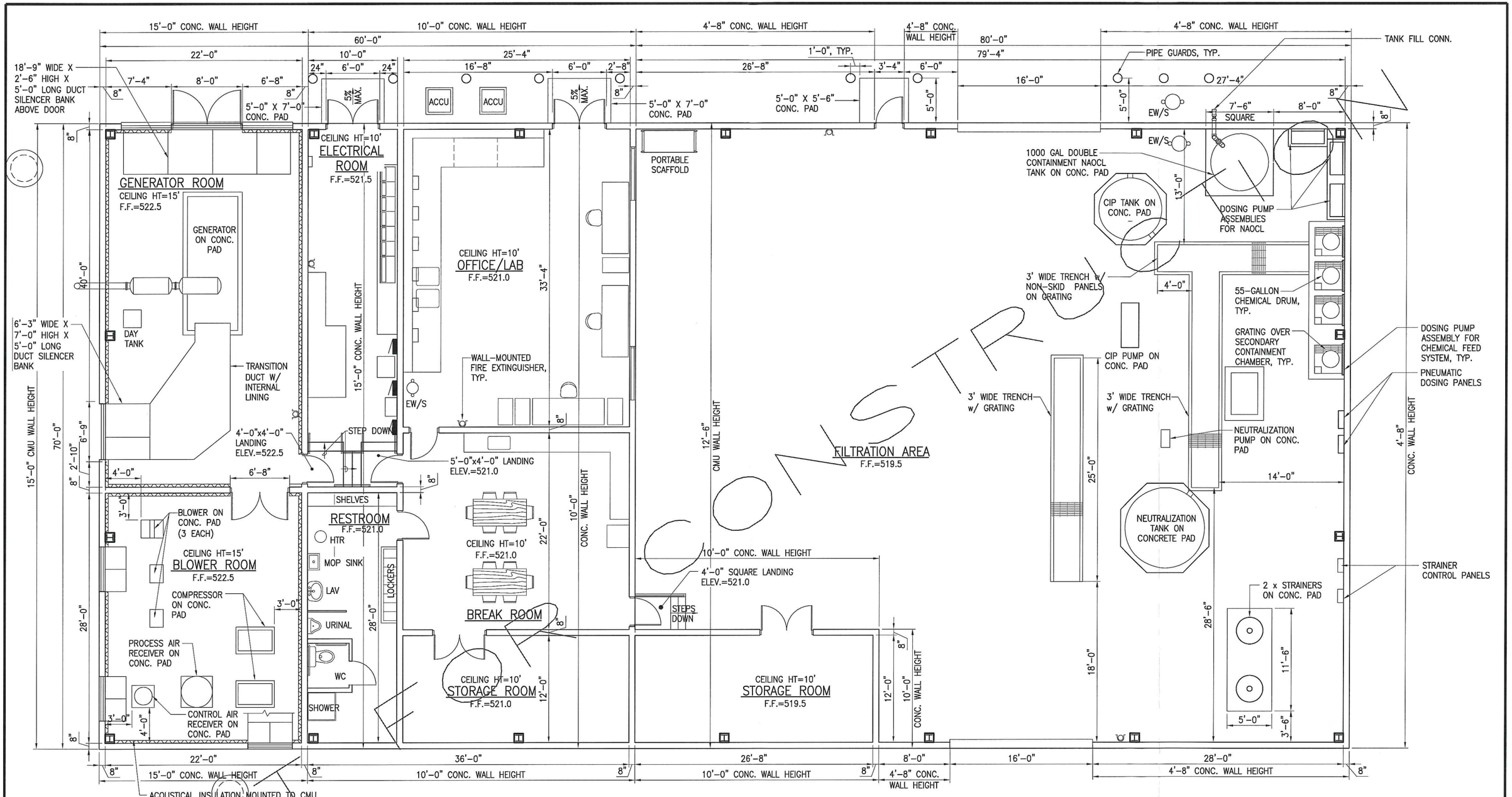
WTP SITE PLAN

EXHIBIT
5

FILENAME: C:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 5 - C-2 - WTP SITE PLAN.DWG Jun 12, 2015-6:49 AM

JANUARY 2015



TREATMENT PLANT BUILDING – PRELIMINARY FLOOR PLAN

SCALE: 3/64"=1'-0

NOTE:

CONCRETE PAD DIMENSIONS ARE APPROXIMATE AND SUBJECT TO REVISION BASED ON REQUIREMENTS OF EQUIPMENT TO BE FURNISHED

0 1

LINE IS 1 INCH AT FULL SIZE
(if NOT 1-inch : Scale Accordingly)

PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
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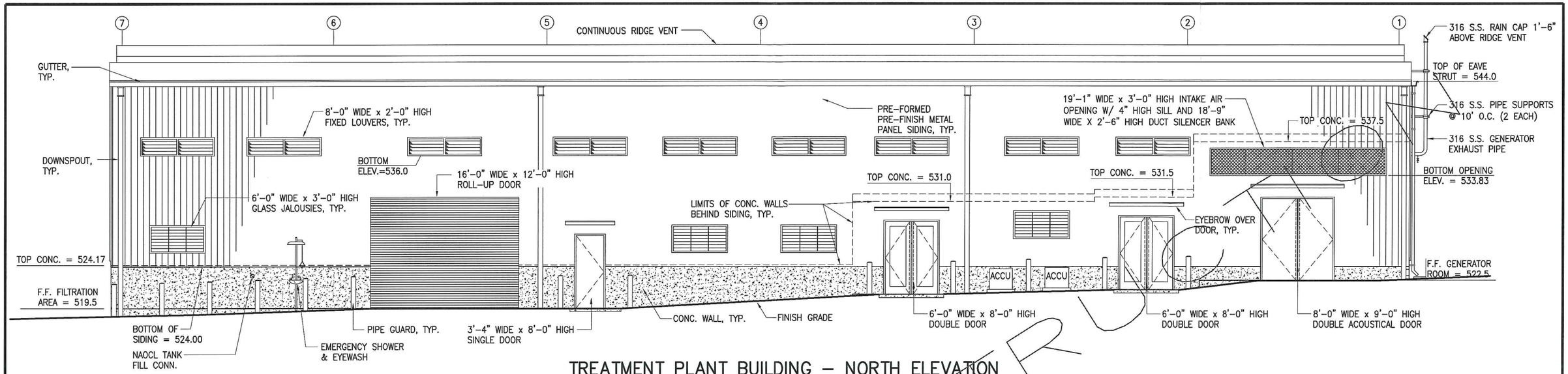
TREATMENT PLANT BUILDING
PRELIMINARY FLOOR PLAN

EXHIBIT 6

FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 6 – A-1 – PRELIMINARY FLOOR PLAN.DWG Jun 11, 2015–11:35 AM

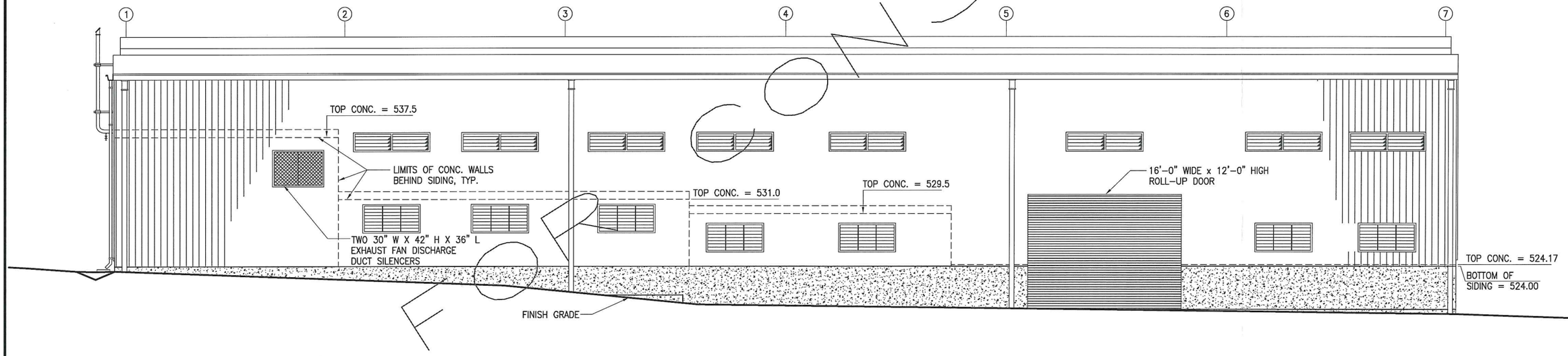
JANUARY 2015



TREATMENT PLANT BUILDING – NORTH ELEVATION

SCALE: 3/32"=1'-0

NOTE: DIMENSIONS FOR DOORS AND LOUVERS ARE OPENING SIZES IN CMU WALL/METAL PANEL SIDING.



TREATMENT PLANT BUILDING – SOUTH ELEVATION

SCALE: 3/32"=1'-0

NOT FOR CONSTRUCTION

0 1

LINE IS 1 INCH AT FULL SIZE
(if NOT 1-inch : Scale Accordingly)

PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

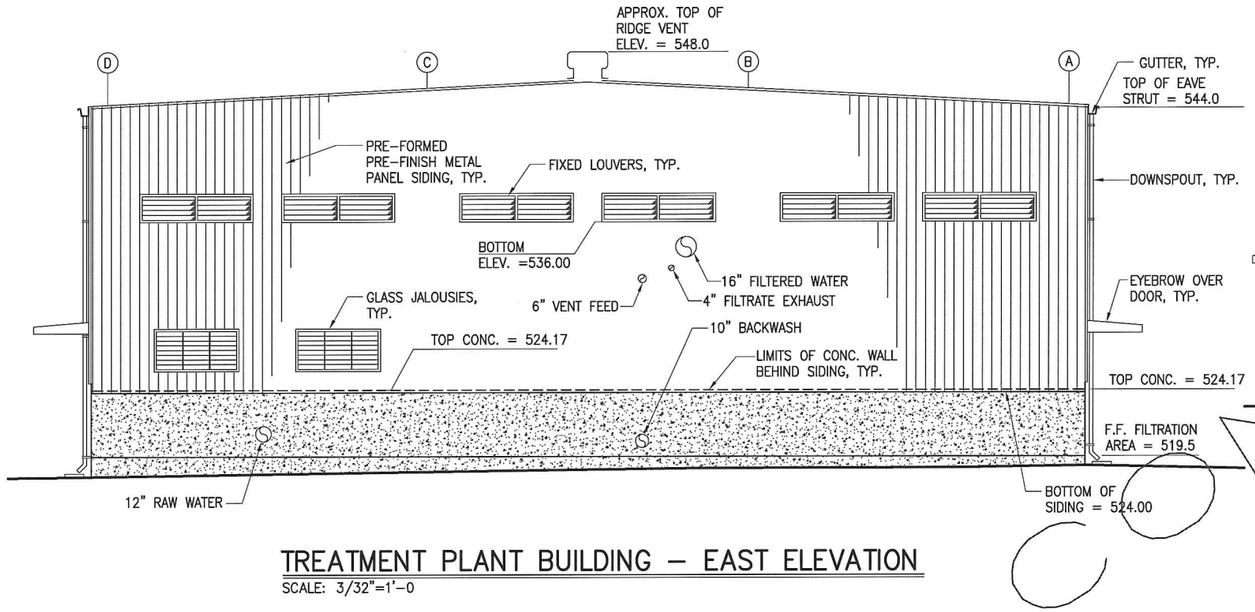
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

TREATMENT PLANT BUILDING
ELEVATIONS – NORTH AND SOUTH

EXHIBIT 7

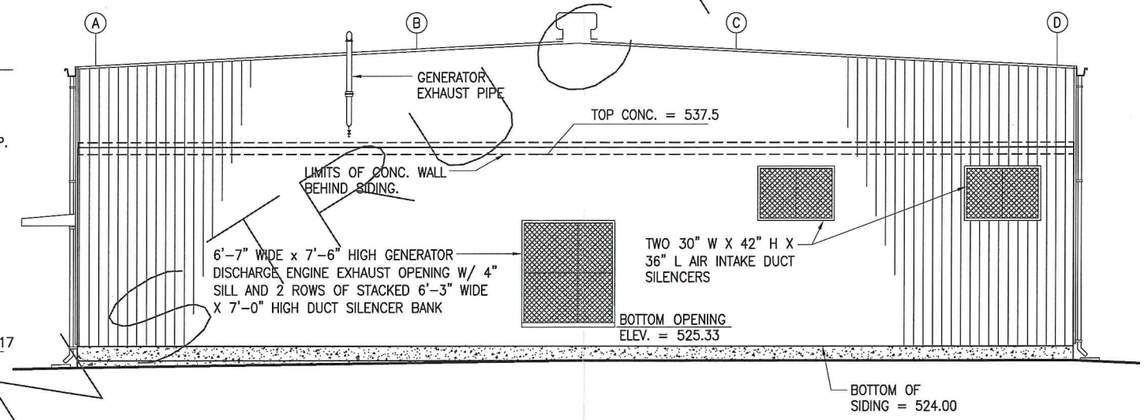
FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 7 – A-2 – ELEVATIONS.DWG Jun 11, 2015-11:33 AM

JANUARY 2015



TREATMENT PLANT BUILDING – EAST ELEVATION

SCALE: 3/32"=1'-0



TREATMENT PLANT BUILDING – WEST ELEVATION

SCALE: 3/32"=1'-0

0 1

LINE IS 1 INCH AT FULL SIZE
(if NOT 1-inch : Scale Accordingly)

PRELIMINARY ENGINEERING REPORT
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TREATMENT PLANT UPGRADES
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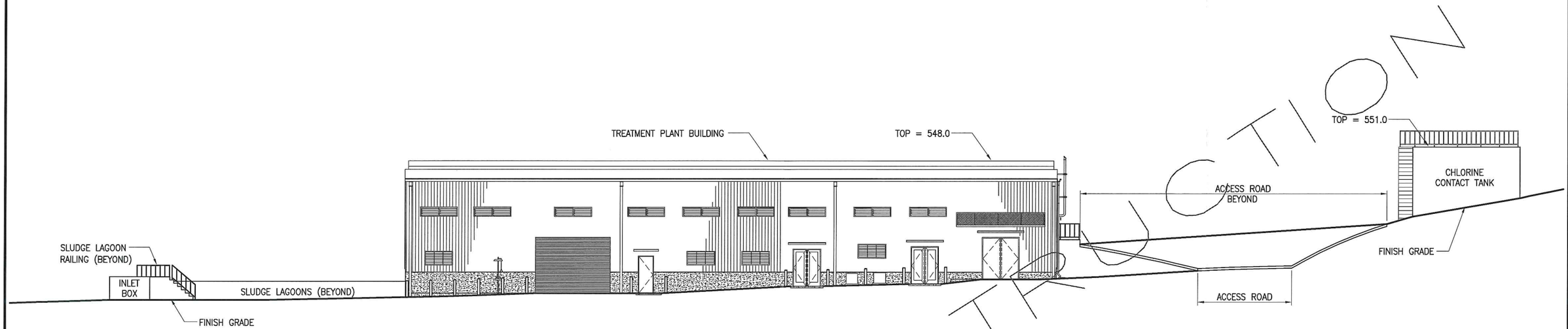
TREATMENT PLANT BUILDING
ELEVATIONS – EAST AND WEST

EXHIBIT
8

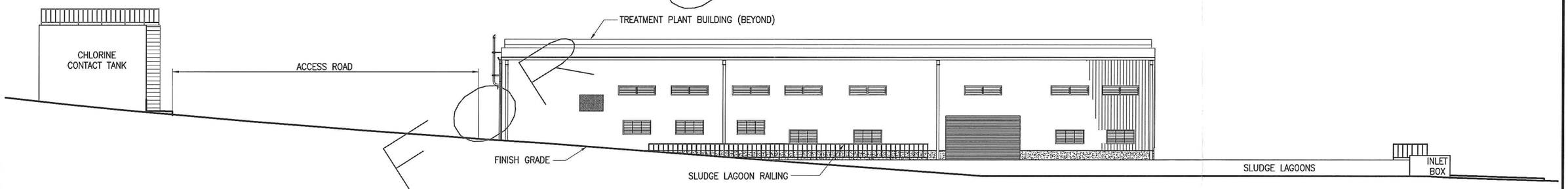
FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 8 – A-3 – ELEVATIONS-2.DWG Jun 11, 2015-11:34 AM

JANUARY 2015



TREATMENT PLANT SITE – NORTH ELEVATION

SCALE: 3/64"=1'–0



TREATMENT PLANT SITE – SOUTH ELEVATION

SCALE: 3/64"=1'–0

0 1

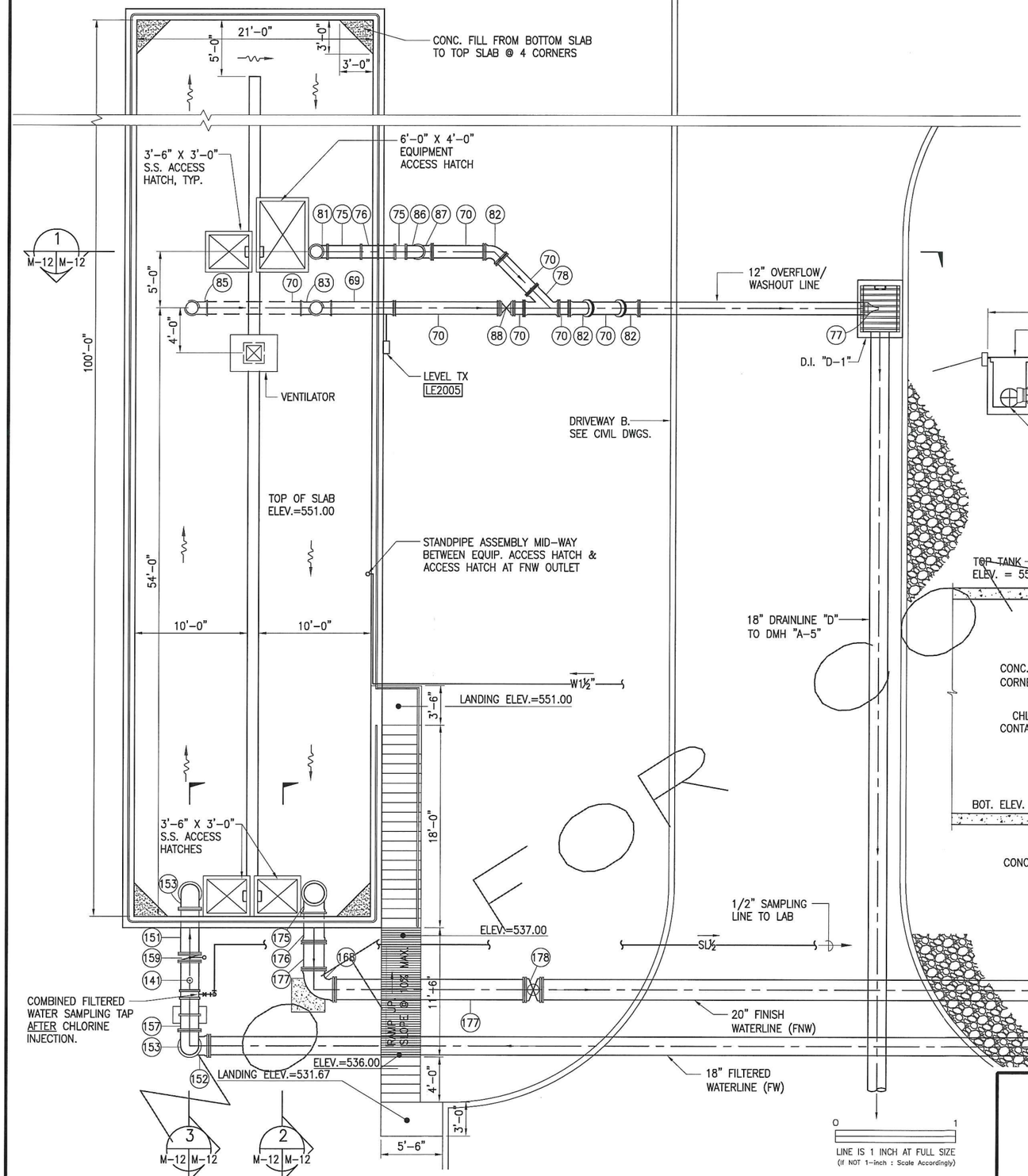
LINE IS 1 INCH AT FULL SIZE
(If NOT 1-inch : Scale Accordingly)

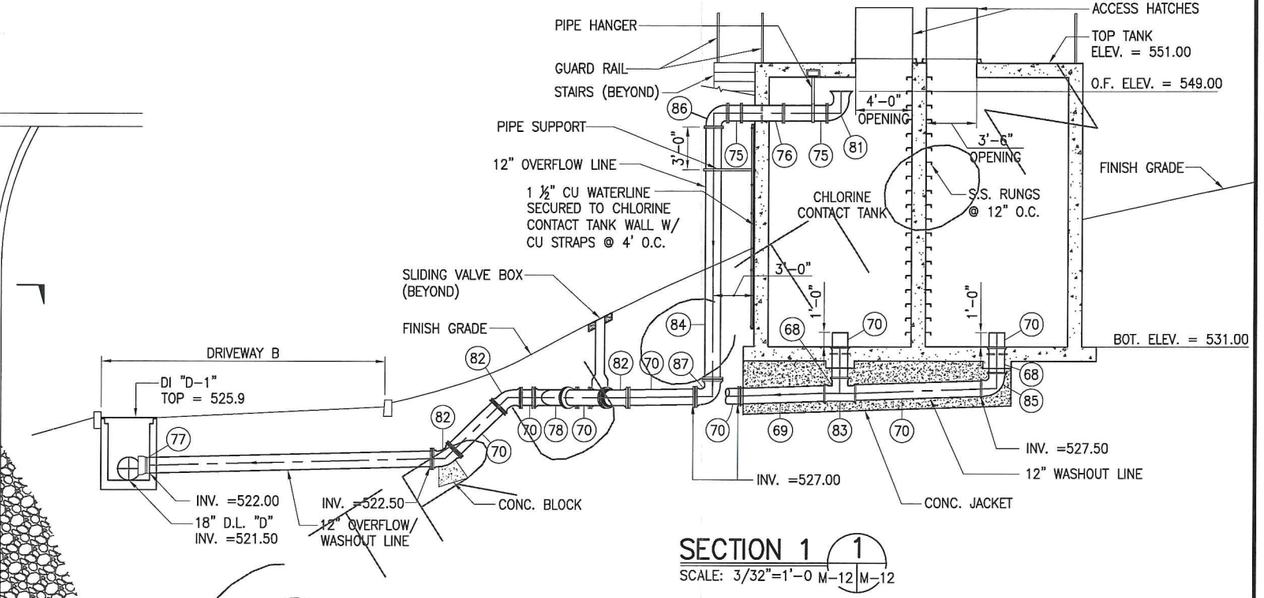
PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

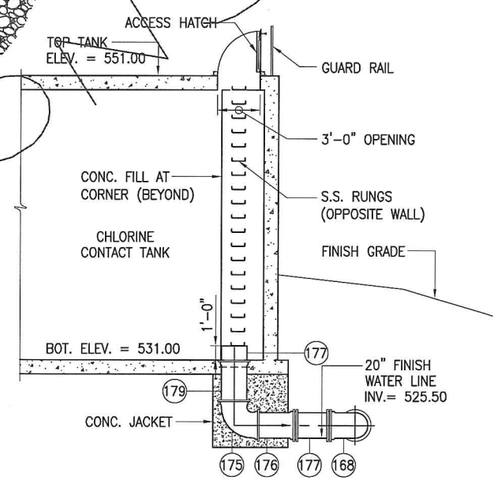
TREATMENT PLANT SITE ELEVATIONS

EXHIBIT 9





SECTION 1 (1)
SCALE: 3/32"=1'-0 M-12 M-12



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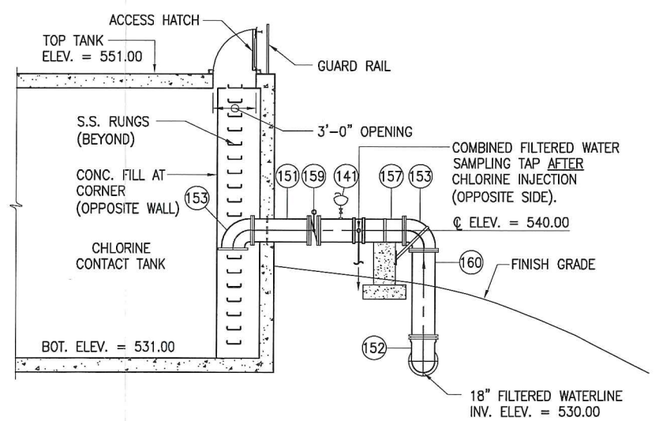
SCALE: 3/32"=1'-0 M-12 M-12



SECTION 3 (3)
SCALE: 3/32"=1'-0 M-12 M-12

CHLORINE CONTACT TANK – PIPING PLAN
SCALE: 3/32"=1'-0

PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER TREATMENT PLANT UPGRADES
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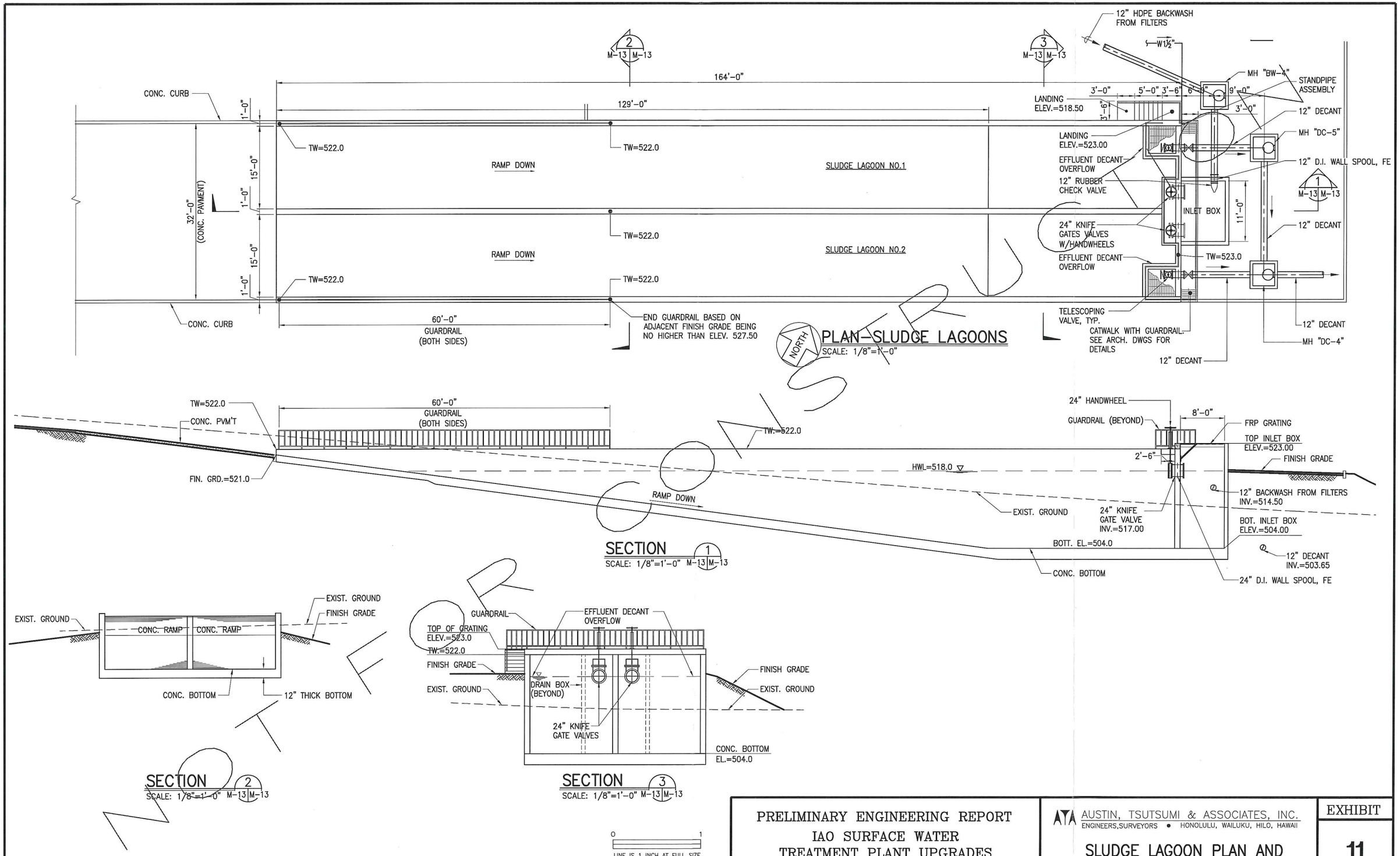
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

CHLORINE CONTACT TANK PIPING PLAN AND SECTIONS

EXHIBIT 10

FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 10 – M-12 CCT PIPING PLAN.DWG Jun 11, 2015-12:06 PM

JANUARY 2015



PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

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SLUDGE LAGOON PLAN AND SECTIONS

EXHIBIT 11

FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\PER FOR FINAL EA\EXHIBITS\EXH 11 – M-13 SLUDGE LAGOON PLAN AND SECTIONS.DWG Jun 11, 2015-12:21 PM

JANUARY 2015

PHOTOS

PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

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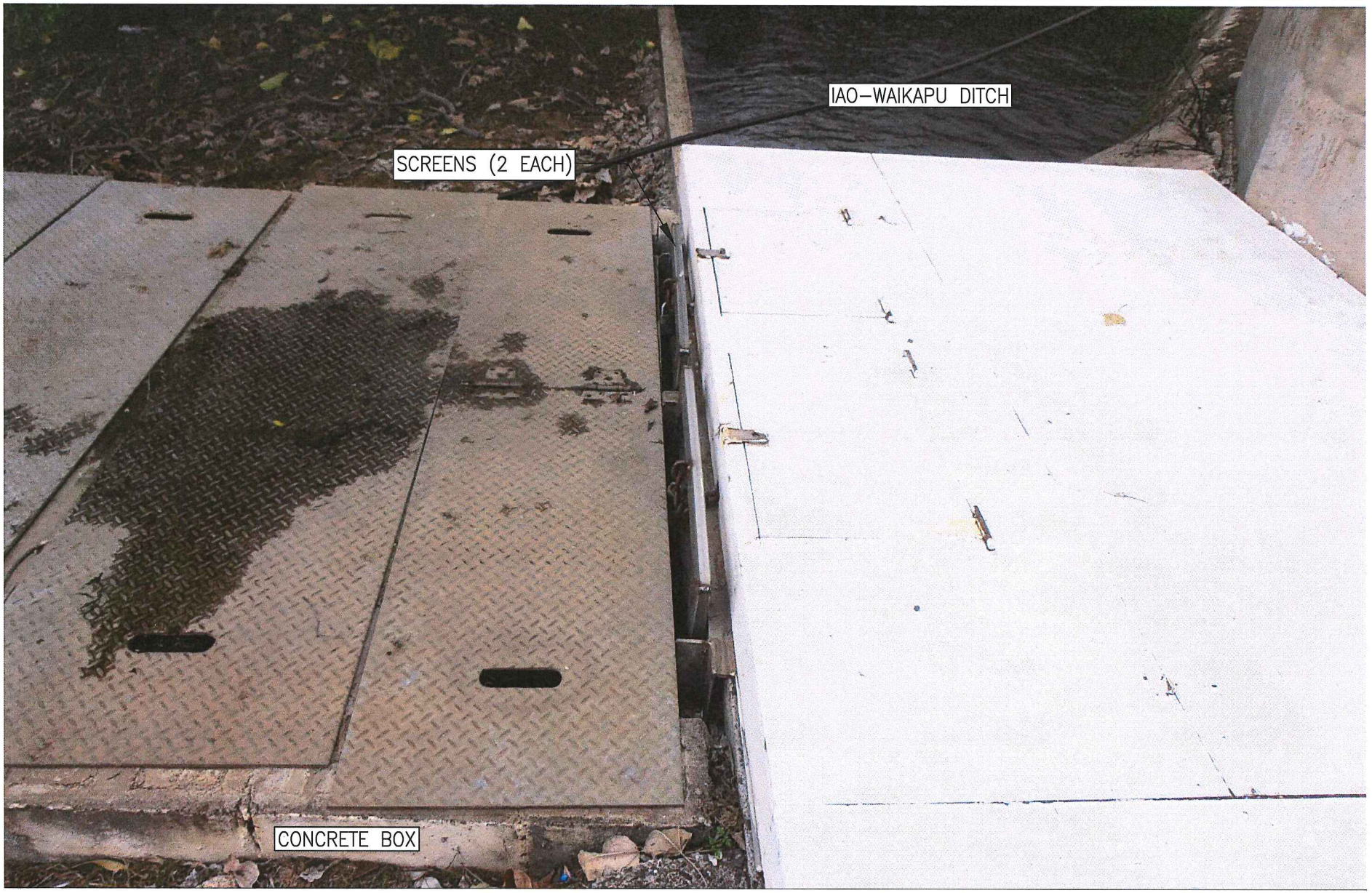
RAW WATER INTAKE AT
IAO–WAIKAPU DITCH

PHOTO
1

JANUARY 2015

FILENAME: C:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\PER\EXHIBITS\PHOTO EXHIBITS-LANDSCAPE.DWG Jan 28, 2015-12:47 PM



PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

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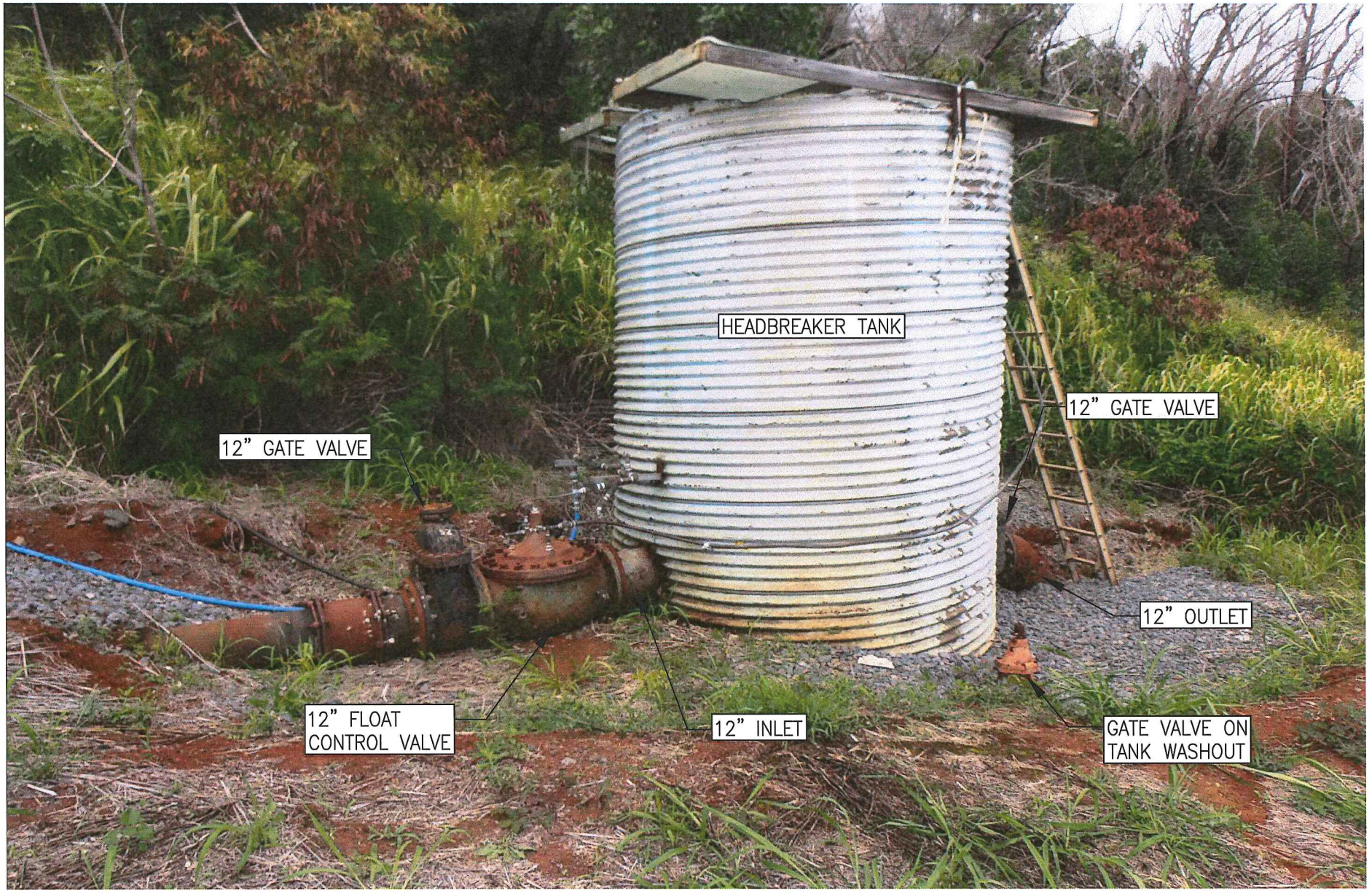
RAW WATER INTAKE AT
IAO–WAIKAPU DITCH

PHOTO
2

JANUARY 2015

FILENAME: C:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\PER\EXHIBITS\PHOTO EXHIBITS–LANDSCAPE.DWG Jan 28, 2015–12:47 PM



PRELIMINARY ENGINEERING REPORT
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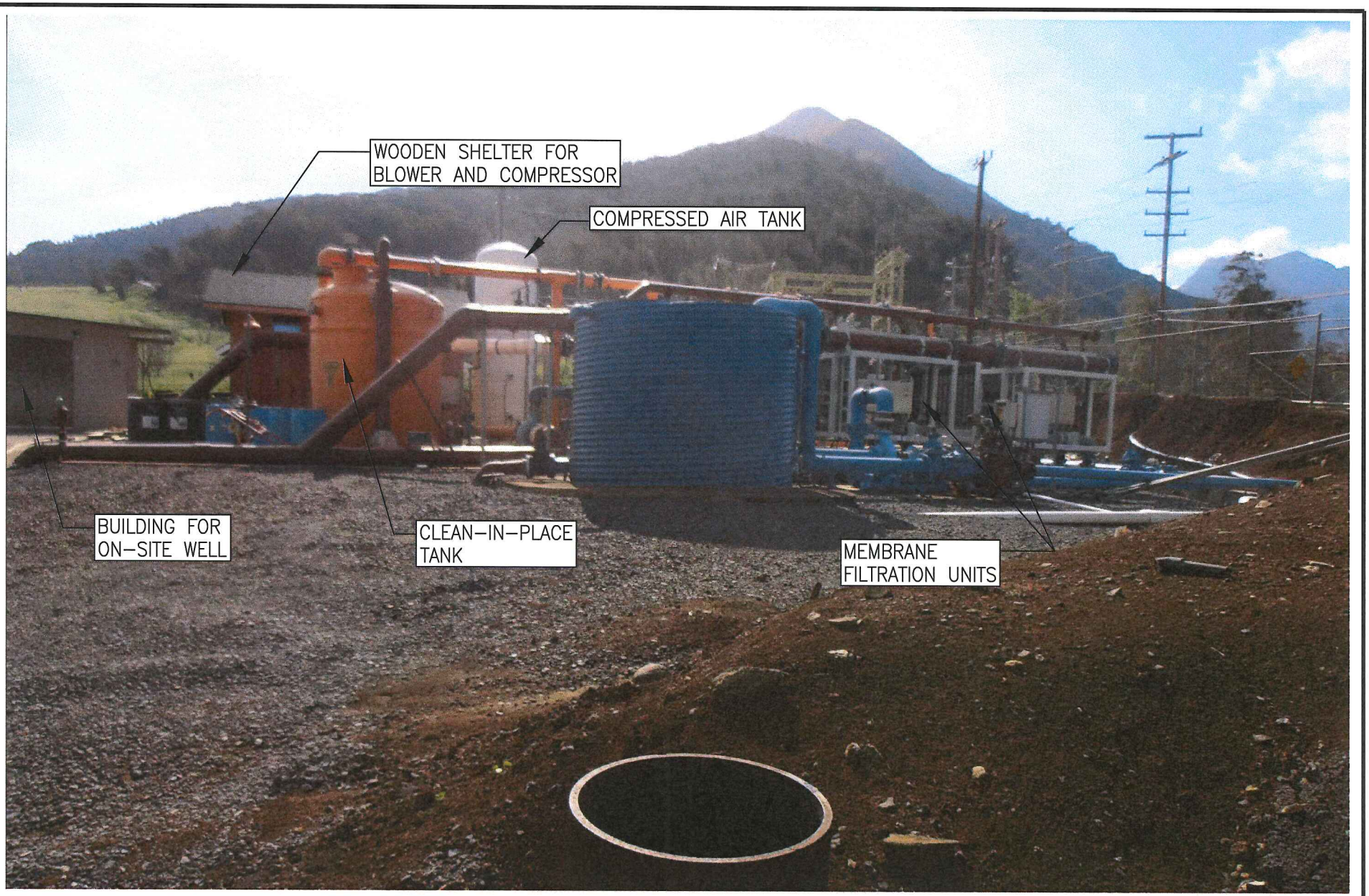
HEADBREAKER TANK

PHOTO
3

JANUARY 2015

FILENAME: C:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\PER\EXHIBITS\PHOTO EXHIBITS-LANDSCAPE.DWG Jan 28, 2015-12:47 PM



PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
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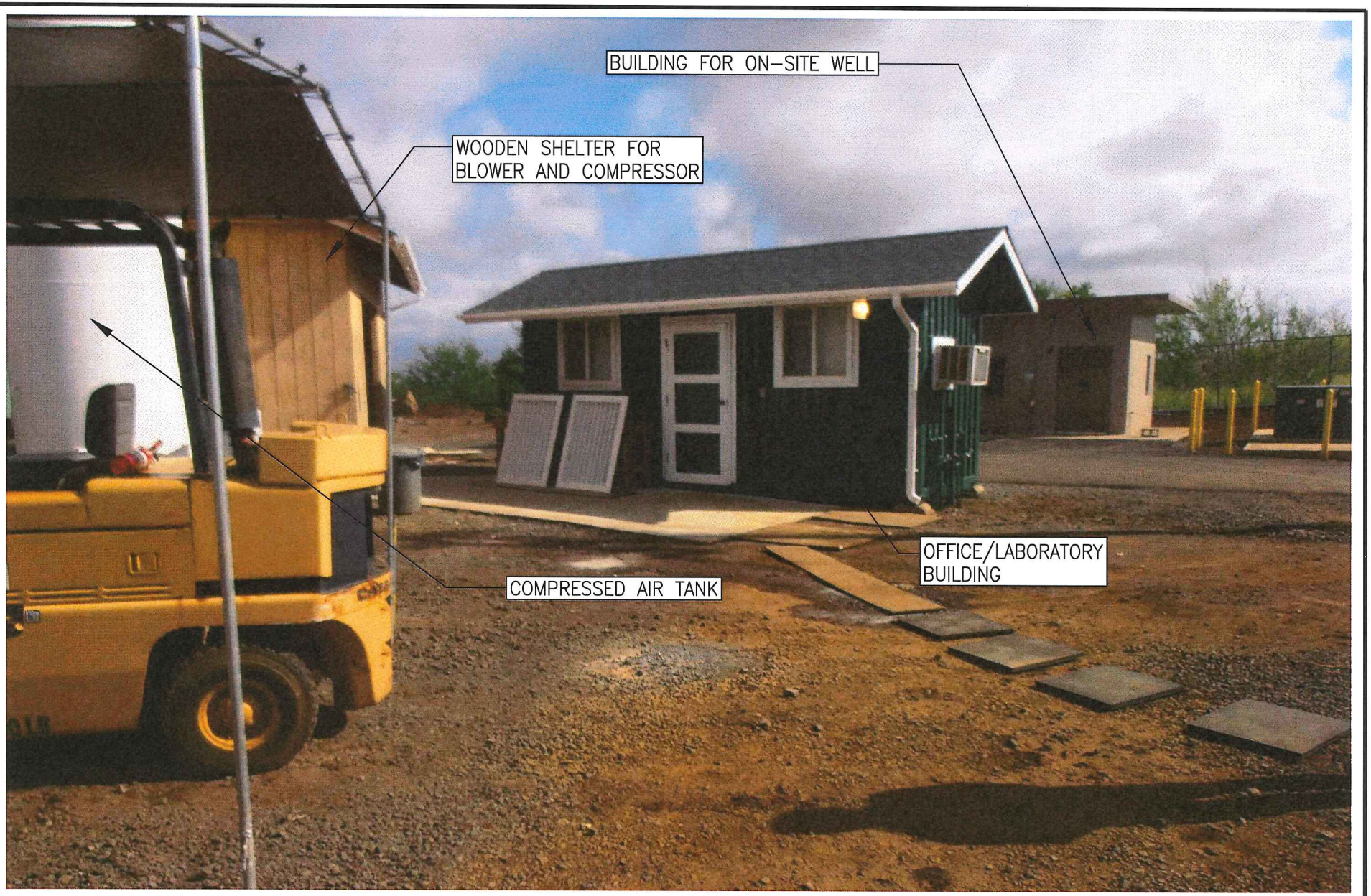
EXISTING IAO WTP

PHOTO
4

JANUARY 2015

FILENAME: C:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\PER\EXHIBITS\PHOTO EXHIBITS-LANDSCAPE.DWG Jan 28, 2015-12:45 PM



PRELIMINARY ENGINEERING REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
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EXISTING IAO WTP

PHOTO
5

JANUARY 2015

FILENAME: C:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\PER\EXHIBITS\PHOTO EXHIBITS-LANDSCAPE.DWG Jan 28, 2015-12:47 PM

APPENDICES

APPENDIX A

CHLORINE CONTACT TIME CALCULATIONS

CT VALUE CALCULATION FOR
IAO SURFACE WATER TREATMENT PLANT UPGRADES

Disinfection will be by chlorination, since the Maui Department of Water Supply (DWS) has stated that disinfection with ammonia will not be used.

The disinfection procedure would involve injecting chlorine into the combined filtered water line immediately after the filtration units, before it enters the chlorine contact tank. The chlorine dosage would be controlled by a compound loop logic, based on the flow rate of the filtered water, and the chlorine concentration of the filtered water. The chlorine concentration would be measured by a chlorine residual monitor water, from a sampling point right after the filtered water flow meter, before it enters the chlorine contact tank.

Contact time for disinfection would be achieved in the on-site chlorine contact tank. From Table E-5 of the State of Hawaii Department of Health's (DOH's) Surface Water Treatment Rule (SWTR) Administrative Manual, dated July 1, 1994, (see Attachment 'A') the required minimum CT Value is 23, based on the following worst-case scenario:

Temperature = 20° C
pH = 7.5
Chlorine Concentration = 1.3 mg/L
Required Minimum CT = 23

The maximum day production rate will be approximately 4.8 mgd. During high demand periods, the peak production rate could be as high as 6.4 mgd. However, the maximum production rate in a 24 hour period would be limited to 3.2 mgd, based on the current water agreement between DWS and Wailuku Water Company, LLC.

The overall inside dimensions of the chlorine contact tank are 22 feet by 100 feet. There will be a single, 2-foot wide baffle wall, dividing the tank into two equal 10-foot wide channels. (See Attachment 'B'.) From the American Water Works Association Research Foundation (AWWARF) publication, "Improving Clearwell Design for CT Compliance", the theoretical detention time (T10/T) would be approximately 0.59. (See Attachment 'C'.)

The finished water will flow by gravity from the CCT to the existing Iao 3.0 MG Tank. The water depth in the CCT will vary, based on the hydraulics between the CCT and the 3.0 MG Tank. For example, at a production rate of 4.8 mgd, with "old" pipe, the water level in the CCT would need to be about 10.5 feet for there to be enough head for the water to flow by gravity to the Tank.

At a production rate of 4.8 mgd, the residence time within the chlorine contact tank at a depth of 10.5 feet would be as follows:

$$\text{Contact Time} = \frac{(0.59)(158{,}000 \text{ gallons})(1440 \text{ minutes/day})}{(4{,}800{,}000 \text{ gallons per day})} = 27.9 \text{ minutes}$$

The CT Value would be as follows:

CT Value = (1.3 mg/l) (27.9 minutes) = 36.3, which is significantly greater than the required CT Value of 23.

Even at the peak production rate of 6.4 mgd, the CT Value would be 52.2, which is still significantly greater than 23.

CT Calculations for different production rates are shown in Attachment 'D'. As mentioned previously, the finished water will flow by gravity from the CCT to the existing Iao 3.0 MG Tank. The water depth in the CCT will vary, based on the hydraulics between the CCT and the 3.0 MG Tank. For all flows, the water level in the CCT required to have the finished water flow by gravity is significantly higher than the minimum required depth to meet the CT value.

Attachments:

- 'A' DOH's SWTR Tables E-5
- 'B' Chlorine Contact Tank Drawing
- 'C' AWWARF Publication Excerpts
- 'D' Calculations

Attachment 'A'

TABLE E-5
CT VALUES FOR INACTIVATION
OF GIARDIA CYSTS BY FREE CHLORINE
AT 20°C (68°F)

CHLORINE CONCENTRATION	pH ≤ 6 Log Inactivations						pH = 6.5 Log Inactivations						pH = 7.0 Log Inactivations					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤0.4	6	12	18	24	30	36	7	15	22	29	37	44	9	17	26	35	43	52
0.6	6	13	19	25	32	38	8	15	23	30	38	45	9	18	27	36	45	54
0.8	7	13	20	26	33	39	8	15	23	31	38	46	9	18	28	37	46	55
1.0	7	13	20	26	33	39	8	16	24	31	39	47	9	19	28	37	47	56
1.2	7	13	20	27	33	40	8	16	24	32	40	48	10	19	29	38	48	57
1.4	7	14	21	27	34	41	8	16	25	33	41	49	10	19	29	39	48	58
1.6	7	14	21	28	35	42	8	17	25	33	42	50	10	20	30	39	49	59
1.8	7	14	22	29	36	43	9	17	26	34	43	51	10	20	31	41	51	61
2.0	7	15	22	29	37	44	9	17	26	35	43	52	10	21	31	41	52	62
2.2	7	15	22	29	37	44	9	18	27	35	44	53	11	21	32	42	53	63
2.4	8	15	23	30	38	45	9	18	27	36	45	54	11	22	33	43	54	65
2.6	8	15	23	31	38	46	9	18	28	37	46	55	11	22	33	44	55	66
2.8	8	16	24	31	39	47	9	19	28	37	47	56	11	22	34	45	56	67
3.0	8	16	24	31	39	47	10	19	29	38	48	57	11	23	34	45	57	68

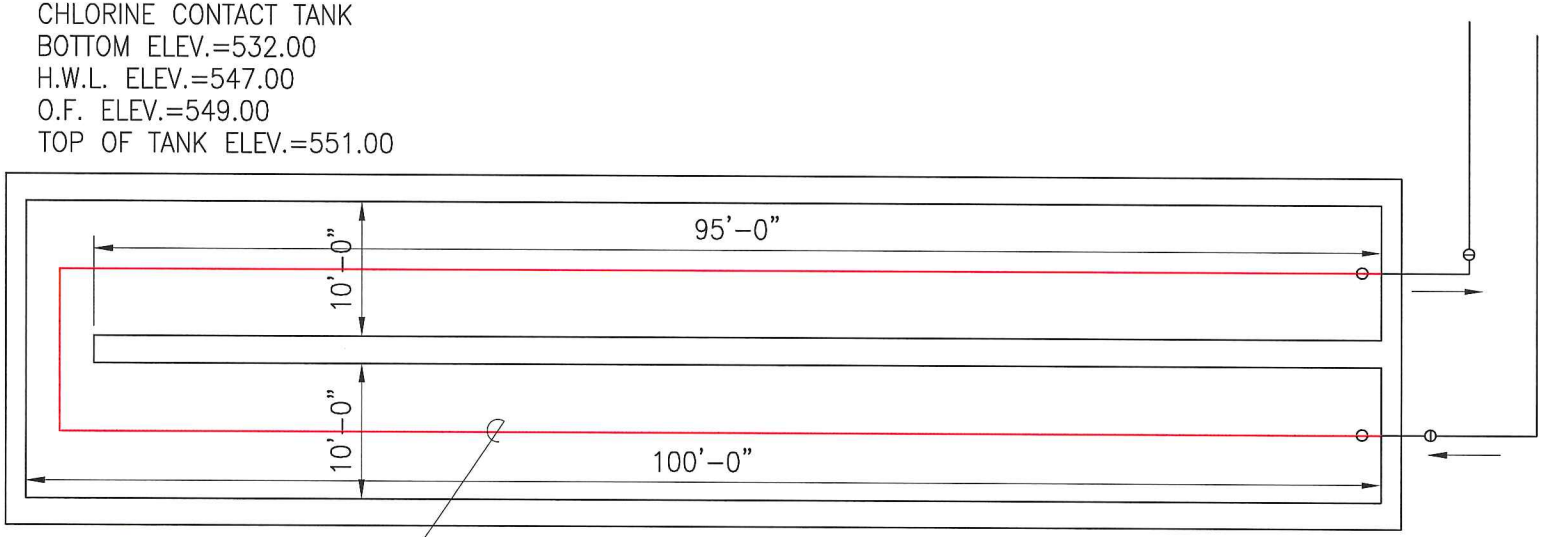
TABLE E-5 (CONTINUED)
CT VALUES FOR INACTIVATION
OF GIARDIA CYSTS BY FREE CHLORINE
AT 20°C (68°F)

CHLORINE CONCENTRATION	pH = 7.5 Log Inactivations						pH = 8.0 Log Inactivations						pH = 8.5 Log Inactivations					
(mg/L)	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
≤0.4	10	21	31	41	52	62	12	25	37	49	62	74	15	30	45	59	74	89
0.6	11	21	32	43	53	64	13	26	39	51	64	77	15	31	46	61	77	92
0.8	11	22	33	44	55	66	13	26	40	53	66	79	16	32	48	63	79	95
1.0	11	(22)	34	45	56	67	14	27	41	54	68	81	16	33	49	65	82	98
1.2	12	23	35	46	58	69	14	28	42	55	69	83	17	33	50	67	83	100
1.4	12	23	35	47	58	70	14	28	43	57	71	85	17	34	52	69	86	103
1.6	12	24	36	48	60	72	15	29	44	58	73	87	18	35	53	70	88	105
1.8	12	25	37	49	62	74	15	30	45	59	74	89	18	36	54	72	90	108
2.0	13	25	38	50	63	75	15	30	46	61	76	91	18	37	55	73	92	110
2.2	13	26	39	51	64	77	16	31	47	62	78	93	19	38	57	75	94	113
2.4	13	26	39	52	65	78	16	32	48	63	79	95	19	38	58	77	96	115
2.6	13	27	40	53	67	80	16	32	49	65	81	97	20	39	59	78	98	117
2.8	14	27	41	54	68	81	17	33	50	66	83	99	20	40	60	79	99	119
3.0	14	28	42	55	69	83	17	34	51	67	84	101	20	41	61	81	102	122

Target residual is 1.3 mg/L

ATTACHMENT 'B'

CHLORINE CONTACT TANK
BOTTOM ELEV.=532.00
H.W.L. ELEV.=547.00
O.F. ELEV.=549.00
TOP OF TANK ELEV.=551.00



LENGTH =207'
WIDTH = 10.0'
L/W =20.7
T_{10}/T = 0.59

CHLORINE CONTACT TANK

NOT TO SCALE

6/12/2015

Attachment 'C'

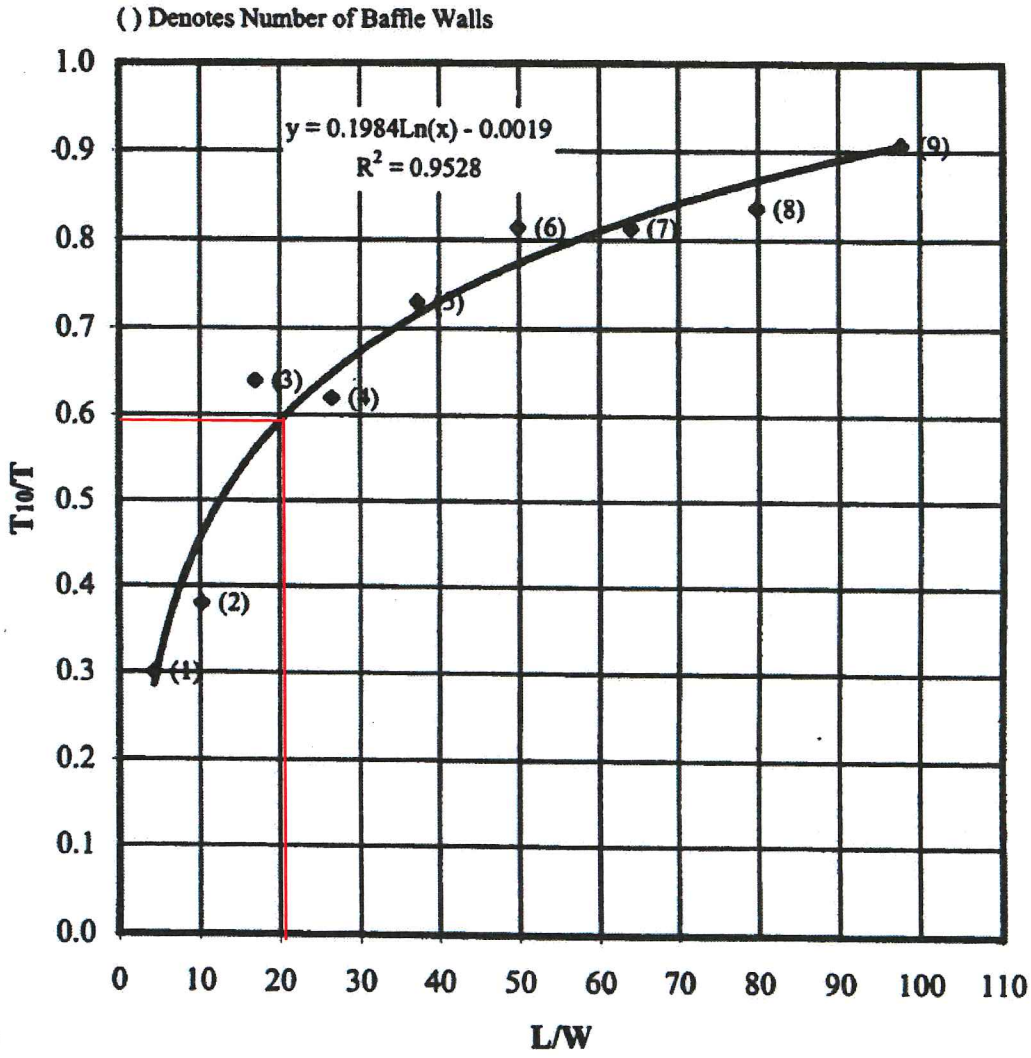


Figure 4.17 Impact of L/W on T_{10}/T ratio for rectangular clearwells

Ref: American Water Works Association Research Foundation (AWWARF) publication, "Improving Clearwell Design for CT Compliance"

Attachment 'D'

Iao WTP Upgrades
CT Calculations

CT VALUE CALCULATION

Criteria:

Temperature:	20	Degrees C		
pH:	7.5			
Chlorine Concentration:	1.3	mg/l		
Required Minimum CT:	**23**			
Avg. Day Production Rate =	3.2	mgd =	2,222	gpm
Max. Day Production Rate =	4.8	mgd =	3,333	gpm
Peak Day Production Rate =	6.4	mgd =	4,444	gpm

Tank Volume:

Bottom Elevation =	531	feet		
High Water Elevation =	547	feet		
Overflow Elevation =	549	feet		
Length (inside) =	100	feet		
Width (inside) =	22	feet		
Inside Wall Length =	95	feet		
Inside Wall Width =	2	foot		
Area (including wall) =	2,200	sf		
Wall Area =	190	sf		
Number of Baffle Walls =	1			
Working Area (excluding walls) =	2,010	sf		
Volume at High Water Elevation =	32,160	cf =	240,589	gallons
Volume at Overflow Water Elevation =	36,180	cf =	270,663	gallons

T10/T:

L = Average Flow Path Length =	206	feet
W = Channel Width =	10	feet
L/W =	20.6	
T10/T =	**0.59**	From Figure 4.17 (See Attachment B)

Attachment 'D'

Iao WTP Upgrades
CT Calculations

CT Calculation:

CT = T10/T * Min. Volume /Production Rate

Water Depth (ft)	CCT Volume (cf)	CCT Volume (gallons)	Production Rate (mgd)	Production Rate (gpm)	T10/T	Contact Time (min.)	CT Value	Comments
Average Day Production								
4.5	9,045	67,666	3.2	2222	0.59	18.0	23.4	minimum required depth for CT of 23
7.1	14,271	106,761	4.8	3333	0.59	18.9	24.6	CT at minimum required depth for flow to Iao Tank*
16.0	32,160	240,589	3.2	2222	0.59	63.9	83.0	High Water Level
Maximum Day Production								
6.7	13,467	100,747	4.8	3333	0.59	17.8	23.2	minimum required depth for CT of 23
10.5	21,105	157,887	4.8	3333	0.59	27.9	36.3	CT at minimum required depth for flow to Iao Tank*
16.0	32,160	240,589	4.8	3333	0.59	42.6	55.4	High Water Level
Peak Day Production								
8.9	17,889	133,828	6.4	4444	0.59	17.8	23.1	minimum required depth for CT of 23
15.1	30,351	227,056	4.8	3333	0.59	40.2	52.2	CT at minimum required depth for flow to Iao Tank*
16.0	32,160	240,589	6.4	4444	0.59	31.9	41.5	High Water Level

* Based on "Old" pipe.

APPENDIX B.

Preliminary Plans

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII

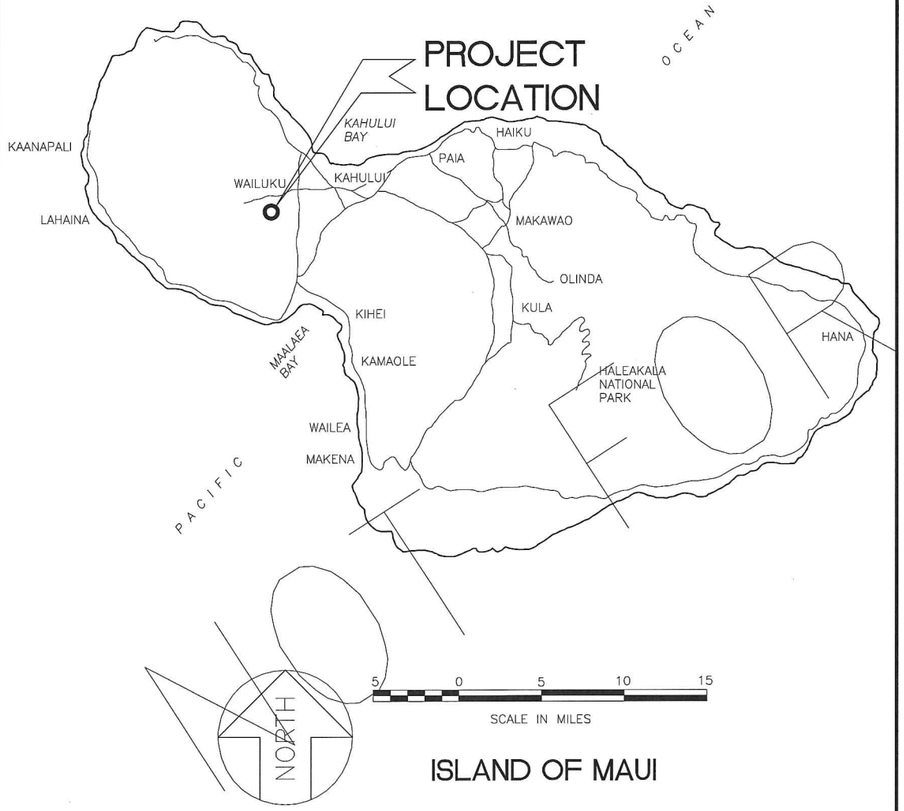
IAO SURFACE WATER TREATMENT PLANT UPGRADES

DWS JOB NO. 12-03

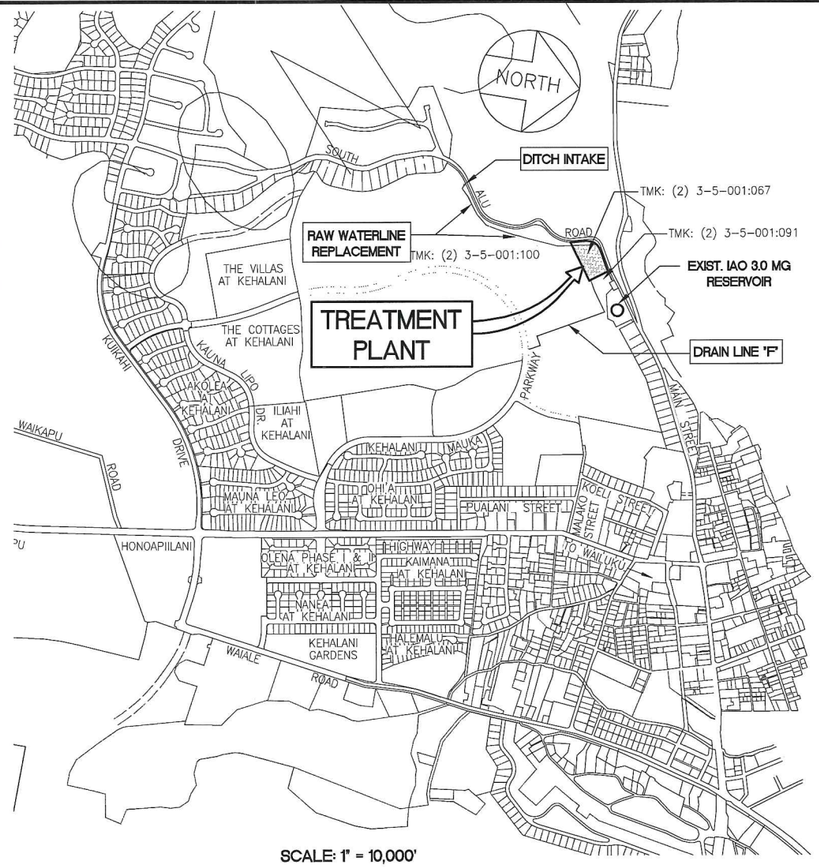
IAO, MAUI, HAWAII

TAX MAP KEY: (2) 3-5-001:067 (PORTION) AND 091 (PORTION) (TREATMENT PLANT)
TAX MAP KEY: (2) 3-5-001:100 (PORTION) LOT P-2-B (DRAIN LINE "F")
TAX MAP KEY: (2) 3-5-001:100 (PORTION) (DITCH INTAKE IMPROVEMENTS AND RAW WATERLINE REPLACEMENT)

PROJECT LOCATION MAP



ISLAND OF MAUI



SCALE: 1" = 10,000'

APPROVED

CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION — DATE
DEPARTMENT OF HEALTH, STATE OF HAWAII

DIRECTOR, DEPARTMENT OF WATER SUPPLY — DATE
COUNTY OF MAUI

COUNTY ENGINEER, DEPARTMENT OF PUBLIC WORKS — DATE
COUNTY OF MAUI

DWG. NO. T-1
SHEET 1 OF X

FILE	POCKET	FOLDER	NO.

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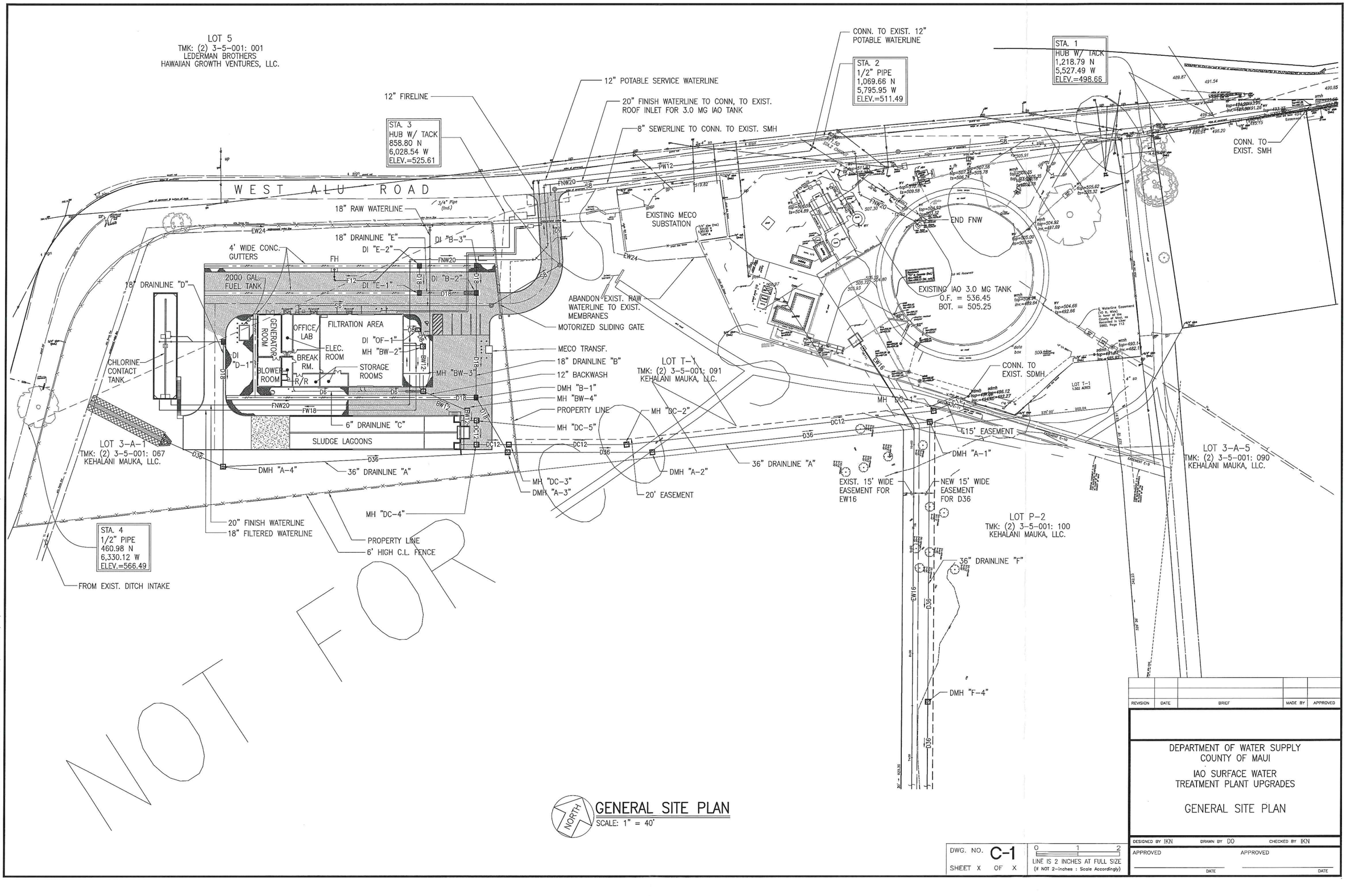
JOB NO. 0-13-002



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LOT 5
TMK: (2) 3-5-001: 001
LEDERMAN BROTHERS
HAWAIIAN GROWTH VENTURES, LLC.

STA. 3
HUB W/ TACK
858.80 N
6,028.54 W
ELEV.=525.61

W E S T A L U R O A D

guard rail
edge of pavement
double yellow line
edge of pavement @ bottom of bank
wire fence line
underground water line
abandoned drain inlet
conc. wall
2-kiawe d=1' h=25'
3/4" Pipe (fnd.) TIE TO GATE POST 334°53'38" — 77.93'
59°26'19" — 57.45'
60°50'00" — 207.43'
53°00'00" — 40.00'
35°00'00" — 54.00'
15°00'00" — 53.00
1°00'00" — 27.00'
350°58'46" — 25.22'
3/4" pipe (fnd.)
555.10
564.42
STA. 0+00 DWY B=
STA. 4+11 DWY A
BEGIN DWY B ℄
STA. 4+21 DWY A
END DRIVEWAY A ℄
STA. 0+00 DWY A
BEGIN DWY A ℄
BEGIN CONC. CURB
A C-2 C-10 DRIVEWAY A SECTION
4' WIDE CONC. GUTTERS
D C-2 C-18
CONCRETE CURB, TYP.
E C-2 C-18
ACCESSIBILITY PARKING AREA
D C-2 C-10
499.21'
37°09'52"
145°00'00" — 68.80'
PW2-1/2
PW1-1/2
FW12
FNW20
FW18
10 LF REINFORCED CONC. JACKET
D18
D12
D8
D6
BW12
DC12
D36
S6
S8
FH
F12
140'
4+21
4+00
3+00
61°13'16" — 292.48'
2+00
65'
1+00
1+39.5
CHLORINE CONTACT TANK
REMOVE EXIST. WIRE FENCE LINE
DRIVEWAY B SECTION
C C-2 C-10
BEGIN CONC. CURB
PIPE GUARD, TYP. (7 EACH)
2000 GAL. FUEL TANK
F C-2 C-21
GENERATOR ROOM
ELEC. ROOM (A/C)
OFFICE/LAB (A/C)
BREAK ROOM (A/C)
R/R
BLOWER ROOM
STORAGE
STORAGE
70' WTP BUILDING
PIPE GUARD, TYP. (10 EACH)
E C-2 C-16
4" GRAVEL FILL
B C-2 C-18
WHEEL STOP
A C-2 C-18
FILTRATION AREA
END CONC. CURB
CONC. CURB
CO
ACCESSIBILITY PARKING SPACE SIGN
E C-2 C-20
CONC. HEADER
G C-2 C-18
9' TYP.
20' TYP.
10'R
40'R
30'
20'R
25'
139.50'
33°13'21"
20'
30'
27'
33'
102'
164'
152.48'
145°00'00"
RAMP DOWN
I C-2 C-18 CONC. PAVEMENT
14 LF REINFORCED CONC. JACKET
SLUDGE LAGOONS
END CONC. HEADER
BEGIN CONC. HEADER
MECO TRANSF. SEE ELEC DWGS
PIPE GUARD, TYP. SEE ELEC DWGS. 5' O.C., EXCEPT AS WHERE SHOWN ON ELEC. DWGS.
PROPERTY LINE
5'
7'
20'-0" EASEMENT

LOT 3-A-1
TMK: (2) 3-5-001: 067
KEHALANI MAUKA, LLC.

LOT T-1
TMK: (2) 3-5-001: 091
KEHALANI MAUKA, LLC.

TMK: (2) 3-5-001: Q48
MAUI ELECTRIC CO., LTD.
EXISTING MECO SUBSTATION
jersey barriers
wire fence
chain link fence
gate
gravel parking
DRIVEWAY A SECTION
B C-2 C-10
DRIVEWAY A PROFILE
A C-2 C-11
CONCRETE CURB
H C-2 C-18 CONC. DROP CURB
MOTORIZED SLIDING GATE
GATE CONTROL STATION
GATE OPERATOR
ABANDON EXIST. RAW WATERLINE TO EXIST. MEMBRANES

MATCH LINE
FOR CONTINUATION, SEE DWG. C-3

STA. 4
1/2" PIPE
460.98 N
6,330.12 W
ELEV.=566.49

DRIVEWAY B PROFILE
B C-2 C-11
STA. 1+39.5 DWY B
END DRIVEWAY B ℄
A C-2 C-16 6' HIGH C.L. FENCE
KUKUI TREE, TYP.
SEE LANDSCAPING DWGS
PROPERTY LINE
FROM EXIST DITCH INTAKE
345°00'00" — 181.50'
482.61' — 235°00'00"
grm headwall
wire fence line
underground water line

CURVE DATA						
Curve #	Δ	Δ/2	R	T	Ch	Lc
①	93°58'39"	46°59'20"	40.00'	42.88	58.50'	65.61'

NORTH
WTP SITE PLAN
SCALE: 1" = 20'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

WTP SITE PLAN

DESIGNED BY IKN DRAWN BY DO CHECKED BY IKN

APPROVED _____ DATE
APPROVED _____ DATE

DWG. NO. C-2
SHEET X OF X

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if NOT 2-inches : Scale Accordingly)

FNC:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\EA\DRAWINGS\EA\C-2 - WTP SITE PLAN.DWG Jul 07, 2015-11:26 AM

STA. 2
1/2" PIPE
1,069.66 N
5,795.95 W
ELEV.=511.49

TMK (2) 3-5-001:001
LEDERMAN BROTHERS
HAWAIIAN GROWTH VENTURES, LLC.

STA. 1
HUB W/ TACK
1,218.79 N
5,527.49 W
ELEV.=498.66

BEGIN 12" PW
CONN. TO EXISTING
12" WATERLINE

12" POTABLE SERVICE
WATERLINE TO WTP

20" FINISH WATERLINE TO
CONN, TO EXIST. ROOF INLET
FOR 3.0 MG IAO TANK

8" SEWERLINE TO CONN. TO
EXIST. SMH

W E S T A L U R O A D

END SL
CONNECT TO
EXIST. SMH

LOT 16-A
TMK (2) 3-5-008:017
DENNIS I. HINAHARA

EXISTING MECO
SUBSTATION

TMK: (2) 3-5-001: 048
MAUI ELECTRIC CO., LTD.

ABANDON EXIST. RAW
WATERLINE TO EXIST.
MEMBRANES

MATCH LINE
FOR CONTINUATION, SEE DWG. C-2

END FNW

3.0 MG Reservoir

EXISTING IAO TANK
O.F. = 536.45
BOT. = 505.25

Benchmark
"□" in Concrete (fnd.)
Elev.=505.25
Elev.=505.13 (fnd. mrk.)

LOT WD-3
TMK (2) 3-5-001:096
KEHALANI MAUKA, LLC.

℄ Waterline Easement
(10 ft. Wide)
in favor of the
County of Maui, as
Recorded in Liber
2882, Page 113

LOT 3-A-5

CONN. TO
EXIST. SDMH

TMK: (2) 3-5-001: 021

MH "DC-1"

12" DECANT

20' EASEMENT

15' EASEMENT

DMH "A-1"

36" DRAINLINE "A"

36" DRAINLINE "F"

EASEMENT E-10

EASEMENT E-9

LOT P-2
TMK: (2) 3-5-001: 100
KEHALANI MAUKA, LLC.

EXIST. 15' WIDE
EASEMENT FOR
EW16

NEW 15' WIDE
EASEMENT
FOR D36

EXISTING EASEMENT E-10
FOR WATERLINE PURPOSES
IN FAVOR OF THE
COUNTY OF MAUI

NORTH

OFF-SITE PLAN
SCALE: 1" = 20'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

OFF-SITE PLAN

DESIGNED BY IKN DRAWN BY DO CHECKED BY IKN

APPROVED _____ DATE
APPROVED _____ DATE

DWG. NO. C-3
SHEET X OF X

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

FNC: \2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\EA\DRAWINGS\EA\C-3 - OFF-SITE PLAN.DWG Jul 07, 2015 - 11:27 AM

NOTES:

1. STA. 0+00 FW
BEGIN FW
1–18"x12" REDUCER ELBOW, FE
1–CONC. BLOCK

2. STA. 0+23 FW
1–18" 1/4 BEND, MJ (BV)
1–18"x12" REDUCER ELBOW, FE (TV)
1–CONC. BLOCK

3. STA. 2+96 FNW 555.10 DW
1–20" 1/4 BEND, MJ (BV)
1–20"x12" REDUCER ELBOW, FE (TV)
1–CONC. BLOCK

4. STA. 3+19 FNW
1–20" 1/4 BEND, FE (TV)
1–20" 1/4 BEND, MJ (BV)
1–CONC. BLOCK

5. STA. 1+35 RW
1–18" 1/4 BEND, FE (TV)
1–18" 1/4 BEND, MJ (BV)
1–CONC. BLOCK

6. STA. 1+41.5 RW
END RW
18" 1/4 BEND, FE

7. STA. 2+66.4 PW
O/S 43.0 RT.
1–4" 1/4 BEND, MJ
1–CONC. BLOCK

8. STA. 0+89.6 BW
MH "BW–4"
TOP=518.50
INV.=514.80

9. STA. 0+00 DC
BEGIN DC
INV.=504.00

10. STA. 2+66.4 PW
O/S 13.6 RT.
3/4" ARV W/
TYPE "F" MANHOLE

11. STA. 5+75 FNW
O/S: 10' RT.
1" ARV W/
TYPE "F" MANHOLE

12. STA. 3+73 FNW
1–20" 1/4 BEND, MJ
1–CONC. BLOCK

13. STA. 0+33 F
1–12" 1/4 BEND, MJ
1–CONC. BLOCK

14. STA. 0+58 F
1–12" 1/4 BEND, MJ
1–CONC. BLOCK

15. STA. 0+87 F
1–12" 1/4 BEND, MJ
1–CONC. BLOCK

16. STA. 1+83 F
1–12" 1/8 BEND, MJ
1–CONC. BLOCK

17. STA. 2+27.5 F
1–12" 1/8 BEND, MJ
1–CONC. BLOCK

18. STA. 0+00 DL "E"
DI "E–2"
TOP=518.05
INV.=514.50

19. STA. 0+26 DL "E"
DI "E–1"
TOP=517.76
INV.=514.10

STA. 0+00 RW
BEGIN 18" RW
CONN. TO EXSITING 24" WATERLINE
1–24"x18" TEE, MJ
1–24" PLUG, MJ
1–24" SLEEVE, MJ
1–18" GATE VALVE, MJ W/ SVB
2–CONC. BLOCKS
TEMPORARY FOR TESTING:
1–6" CAP, W/ RETAINER GLAND
TAPPED FOR 2 1/2" I.P.T.
1–6" SPOOL, LTS
1 1/2" CLEANOUT
1–CONC. BLOCK

STA. 2+71.4 PW
END 12" PW
BEGIN 12" FIRE LINE (F)
STA. 0+00 F
1–12" 1/4 BEND, MJ
1–12" GATE VALVE
1–CONC. BLOCK

STA. 2+66.4 PW
1–12" X 4" 1/4 TEE, MJ
1–4" GATE VALVE
1–CONC. BLOCK

STA. 5+69 FNW
1–20" 1/4 BEND, MJ
1–CONC. BLOCK

STA. 3+34 SL
SMH "A–5"
TOP=523.90
INV.=508.60

STA. 5+10.8 FNW
1–20" 1/8 BEND, MJ
1–CONC. BLOCK

STA. 2+61.0 SL
SMH "A–4"
TOP=519.90
INV.=509.30

STA. 4+92.8 FNW
1–20" 1/8 BEND, MJ
1–CONC. BLOCK

REDUCED PRESSURE BACKFLOW PREVENTER FOR IRRIGATION SYSTEM. SEE LANDSCAPING DWGS.

STA. 1+85 SL
SMH "A–3"
TOP=517.15
INV.=510.00

STA. 0+26 DL "B"= STA. 0+80.5 DL "E"
END DL "E"
DI "B–2"
TOP=516.80
INV.=513.30 (W)
INV.=511.90 (N)(S)

STA. 1+26 DL "B"
DI "B–1"
TOP=518.00
INV.=509.90

STA. 0+69 DC
MH "DC–3"
TOP=512.00
INV.=503.00

STA. 1+81.42 DC
MH "DC–2"
TOP=503.00
INV.=497.84

STA. 4+67.13 DL "A"
DMH "A–2"
TOP=502.00
INV.=495.30

STA. 0+00 DL "B"
DI "B–3"
TOP=517.10
INV.=512.40

STA. 0+00 SL
BEGIN SL
CO "A–1"

STA. 1+00 SL
CO "A–2"

STA. (–)0+16 BW
DI "OF–1"
TOP=519.30
INV.=516.10

STA. 0+00 DL "C"
BEGIN DL "C"
CO "C–2"
TOP=522.00
INV=517.30

STA. 2+34 FNW
1–20" 1/4 BEND, MJ
1–CONC. BLOCK

STA. 0+00 BW
BEGIN 12" BW DL
MH "BW–2"
TOP=518.70
INV.=515.90

STA. 0+00 DL "D"
DI "D–1"
TOP=525.90
INV.=521.50

STA. 0+00 FNW
BEGIN FW

STA. 3+20 FW
END FW

STA. 0+64 DL "C"
CO "C–1"
TOP=519.40
INV.=516.20

STA. 3+09.5 FW
1–18" 1/4 BEND, FE (TV)
1–18" 1/4 BEND, MJ (BV)
1–CONC. BLOCK

STA. 0+5.5 FNW
1–20" 1/4 BEND, MJ
1–CONC. BLOCK

STA. 0+00 DL "A"
INLET HEADWALL "A"
TOP WALL=530.50
INV.=526.50

STA. 0+56 DL "A" = STA. 1+19.50 DL "D"
END DL "D"
DMH "A–4"
TOP=529.00
INV.=524.00 D36(W)
INV.=520.30 D18(N), D36(E)

STA. 0+64 FW
1–18" 1/4 BEND, MJ
1–CONC. BLOCK

STA. 0+43.7 BW
=STA. 1+25.5 DL "F"
END DL "F"
MH "BW–3"
TOP=518.50
INV.=515.50

STA. 1+05± BW
END 12" BW DL
@ DISCHARGE INTO SLUDGE LAGOON INLET BOX

STA. 0+15 DC
MH "DC–5"
TOP=518.00
INV.=503.80

STA. 0+38 DC
MH "DC–4"
TOP=518.00
INV.=503.50

STA. 3+28.74 DL "A"
=STA. 1+86.55 DL "B"
END DL "B"
DMH "A–3"
TOP=512.00
INV.=506.00 D18
INV.=503.40 D36

STA. 0+00 SL
BEGIN SL
CO "A–1"

STA. 0+00 DL "B"
DI "B–3"
TOP=517.10
INV.=512.40

STA. 0+00 DL "D"
DI "D–1"
TOP=525.90
INV.=521.50

STA. 0+00 DL "C"
BEGIN DL "C"
CO "C–2"
TOP=522.00
INV=517.30

STA. 0+64 DL "C"
CO "C–1"
TOP=519.40
INV.=516.20

STA. 0+00 BW
BEGIN 12" BW DL
MH "BW–2"
TOP=518.70
INV.=515.90

STA. 0+00 FNW
BEGIN FW

STA. 3+20 FW
END FW

STA. 0+00 DL "A"
INLET HEADWALL "A"
TOP WALL=530.50
INV.=526.50

STA. 0+56 DL "A" = STA. 1+19.50 DL "D"
END DL "D"
DMH "A–4"
TOP=529.00
INV.=524.00 D36(W)
INV.=520.30 D18(N), D36(E)

STA. 0+64 FW
1–18" 1/4 BEND, MJ
1–CONC. BLOCK

STA. 0+43.7 BW
=STA. 1+25.5 DL "F"
END DL "F"
MH "BW–3"
TOP=518.50
INV.=515.50

STA. 1+05± BW
END 12" BW DL
@ DISCHARGE INTO SLUDGE LAGOON INLET BOX

STA. 0+15 DC
MH "DC–5"
TOP=518.00
INV.=503.80

STA. 0+38 DC
MH "DC–4"
TOP=518.00
INV.=503.50

STA. 3+28.74 DL "A"
=STA. 1+86.55 DL "B"
END DL "B"
DMH "A–3"
TOP=512.00
INV.=506.00 D18
INV.=503.40 D36

STA. 0+69 DC
MH "DC–3"
TOP=512.00
INV.=503.00

STA. 1+81.42 DC
MH "DC–2"
TOP=503.00
INV.=497.84

STA. 4+67.13 DL "A"
DMH "A–2"
TOP=502.00
INV.=495.30

END 1–1/2" POTABLE SERVICE WATERLINE

END 2–1/2" POTABLE SERVICE WATERLINE

20" FINISH WATERLINE (FNW) PROFILE

18" DRAINLINE (DL) "D" PROFILE

18" DRAINLINE (DL) "E" PROFILE

18" RAW WATERLINE (RW) PROFILE

12" FIRE LINE (F) PROFILE

2" AND 1" REDUCED PRESSURE BACKFLOW PREVENTERS

10" DOUBLE CHECK DETECTOR ASSEMBLY MANHOLE

2" WATER METER BOX

10 LF REINFORCED CONC. JACKET

8" SEWERLINE (SL) PROFILE

12" BACKWASH (BW) PROFILE

18" DRAINLINE "B" PROFILE

12" DECANT LINE (DC) PROFILE

6" DRAINLINE (DL) "C" PROFILE

18" FILTERED WATERLINE (FW) PROFILE

SLUDGE LAGOONS

14 LF REINFORCED CONC. JACKET

5'± CLR FROM D36 ℄ TO SLUDGE LAGOON CORNER

36" DRAINLINE (DL) "A" PROFILE

KUKUI TREE, TYP. SEE LANDSCAPING DWGS

FROM EXIST. DITCH INTAKE

WEST ALU ROAD

MATCH LINE
FOR CONTINUATION, SEE DWG. C–5

WTP UTILITY SITE PLAN

SCALE: 1" = 20'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

WTP UTILITY SITE PLAN

DESIGNED BY IKN DRAWN BY DO CHECKED BY IKN

APPROVED _____ DATE

APPROVED _____ DATE

DWG. NO. C-4
SHEET X OF X

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if NOT 2–inches : Scale Accordingly)

FNG: \2 – WORK FILES\PROJECT FOLDERS\2013\13–002 – IAO WTF\EA\DRAWINGS\EA\C–4 – WTP UTILITY SITE PLAN.DWG Jul 07, 2015–11:29 AM

STA. 0+00 PW12
BEGIN 12" PW
CONN. TO EXISTING 12" WATERLINE
1–12"x12"" TEE, MJ
2–12" SPOOLS, PE, 12" LONG
2–12" SLEEVE, MJ
1–12" GATE VALVE, MJ, W/SVB
1–CONC. BLOCK
TEMPORARY FOR TESTING:
1–12" CAP, W/ RETAINER GLAND
TAPPED FOR 4" I.P.T.
1–12" SPOOL, LTS
4" CLEANOUT
1–CONC. BLOCK

B
C–5 | C–20

3°44'49"
5.00

TMK (2) 3–5–001:001
LEDERMAN BROTHERS
HAWAIIAN GROWTH VENTURES, LLC.

STA. 8+68.4 FNW
1–20" 1/4 BEND, MJ
1–CONC. BLOCK

STA. 6+65 SL
SMH "A–6"
TOP=509.20±
INV.=502.00

20" FINISH WATERLINE TO
CONN. TO EXIST. ROOF INLET
FOR 3.0 MG IAO TANK

12" POTABLE SERVICE
WATERLINE TO WTP

W E S T A L U R O A D

STA. 9+15 SL
SMH "A–7"
TOP=498.10±
INV.=493.00

STA. 10+61.5± SL
END SL
CONNECT TO EXIST. SMH
TOP=491.66±
INV.=488.0

D
C–5 | C–21

Easement 1

8" SEWERLINE

STA. 0+05 PW
1–12" 1/8 BEND, MJ
1–CONC. BLOCK

EXISTING MECO
SUBSTATION

TMK: (2) 3–5–001: 048
MAUI ELECTRIC CO., LTD.

LOT 16–A
TMK (2) 3–5–008:017
DENNIS I. HINAHARA

STA. 9+10 FNW
1–20" 1/8 BEND, MJ
1–20" 1/32 BEND, MJ
2–CONC. BLOCKS

STA. 9+68± FNW
END FNW
1–16" 1/8 BEND, MJ,
w/ RESTRAINED JOINTS
1–CONC. BLOCK

B
C–5 | M–20

Benchmark
"□" In Concrete (fnd.)
Elev.=505.25
Elev.=505.13 (fnd. mrk.)

3.0 MG Reservoir

EXISTING IAO TANK
O.F. = 536.45
BOT. = 505.25

ABANDON EXIST. RAW
WATERLINE TO EXIST.
MEMBRANES

LOT WD–3
TMK (2) 3–5–001:096
KEHALANI MAUKA, LLC.

C Waterline Easement
(10 ft. Wide)
in favor of the
County of Maui, as
Recorded in Liber
2882, Page 113

MATCH LINE
FOR CONTINUATION, SEE DWG. C–4

STA. 5+13.5± DC12
CONN. TO EXIST. SDMH
TOP=497.58±
INV.=494.50

E
C–5 | C–21

LOT 3–A–5

TMK: (2) 3–5–001: 021

12" DECANT

STA. 4+77.43 DC12
MH "DC–1"
TOP=498.00
INV.=494.85

36" DRAINLINE "A"

EASEMENT E–11

EASEMENT E–10

EASEMENT E–9

EXIST. 15' EASEMENT A
FOR 16" WATERLINE

STA. 0+00 DL "F"
=STA. 7+34.42 DL "A"
END DL "A"
BEGIN DL "F"
DMH "A–1"
TOP=494.50
INV.=483.80 (IN)
INV.=481.50 (OUT)

36" DRAINLINE "F"
SEE DWG. C–15
FOR PLAN AND PROFILE

LOT P–2
TMK: (2) 3–5–001: 100
KEHALANI MAUKA, LLC.

EXISTING EASEMENT E–10
FOR WATER LINE PURPOSES
IN FAVOR OF THE
COUNTY OF MAUI

NORTH

UTILITY OFF–SITE PLAN
SCALE: 1" = 20'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

UTILITY OFF–SITE PLAN

DESIGNED BY IKN | DRAWN BY DO | CHECKED BY IKN

APPROVED _____ DATE
APPROVED _____ DATE

DWG. NO. C-5
SHEET X OF X

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(IF NOT 2–inches : Scale Accordingly)

FNC:\2 – WORK FILES\PROJECT FOLDERS\2013\13–002 – IAO WTF\EA\DRAWINGS\EA\C–5 – UTILITY OFF–SITE PLAN.DWG Jul 07, 2015–11:30 AM

LOT 5
TMK: (2) 3-5-001: 001
LEDERMAN BROTHERS
HAWAIIAN GROWTH VENTURES, LLC.

WEST ALU ROAD

20" FINISH WATERLINE TO CONN. TO EXIST. ROOF INLET FOR 3.0 MG IAO TANK

8" SEWERLINE TO CONN. TO EXIST. SMH

EXISTING MECO SUBSTATION
TMK: (2) 3-5-001: 048
MAUI ELECTRIC CO., LTD.

LIMITS OF GRADING

546.0 HP

PERMANENT TURF REINFORCEMENT MAT (TRM) LINING:
NORTH AMERICAN GREEN VMAX SC-250 OR APPROVED EQUAL.
15' WIDE X 78' LONG

CHLOR. CONTACT TANK
O.F.=549.0
BOT.=531.0
TOP=551.0

TC=525.20
BC=524.70

4' WIDE CONC. CUTTERS

RAW WATERLINE
DI "B-3"
TOP=517.10
INV.=512.40

DI "B-2"
TOP=516.80
INV.=513.30 (W)
INV.=513.90 (N)(S)

TC=517.65
BC=517.15

DI "E-2"
TOP=518.05
INV.=514.50

DI "E-1"
TOP=517.76
INV.=514.10

TC=519.10
BC=518.60

TC=518.80
BC=518.30

TC=517.82
BC=517.32

TC=517.70
BC=517.20

DI "D-1"
TOP=525.90
INV.=521.50

GENERATOR ROOM
F.F.=522.5

ELEC. ROOM (A/C)
F.F.=521.5

OFFICE/LAB (A/C)
F.F.=521.0

2000 GAL. FUEL TANK
523.5
HP=523.4

BLOWER ROOM
F.F.=522.5

4' WIDE CONC. GUTTER

BREAK ROOM (A/C)
F.F.=521.0

STORAGE F.F.=521.0

STORAGE ROOM F.F.=519.5

DI "OF-1"
TYPE G4 DI, TYP
TOP=519.30
INV=516.10

FILTRATION AREA
F.F.=519.5

TOP OF GRAVEL ELEV. =518.60

BACKWASH MH "BW-2"
TOP=518.70
INV.=513.90

MECO TRANSF.
TC=519.00
BC=518.50

BACKWASH MH "BW-4"
TOP=518.50
INV.=514.80

DI "B-1"
TOP=518.00
INV.=509.90

CO "C-2"
TOP=522.00
INV.=517.30

CO "C-1"
TOP=519.40
INV.=516.20

BACKWASH MH "BW-3"
TOP=518.50
INV.=515.50

SLUDGE LAGOONS

MH "DC-5"
TOP=518.00
INV.=503.80

MH "DC-2"
TOP=503.00
INV.=497.84

MH "DC-3"
TOP=512.00
INV.=503.00

MH "DC-4"
TOP=518.00
INV.=503.50

DMH "A-3"
TOP=512.00
INV.=506.00 D18
INV.=503.40 D36

DMH "A-2"
TOP=502.00
INV.=495.30

DMH "A-4"
TOP=529.00
INV.=524.00 D36(W)
INV.=520.30 D18(N), D36(E)

INLET HEADWALL "A"
TOP WALL = 530.50
INV.= 526.50

CLEAR AND GRUB. SEE NOTE.

6' HIGH C.L. FENCE

PROPERTY LINE

ABANDON EXIST. RAW WATERLINE TO EXIST. MEMBRANES

LOT 3-A-1
TMK: (2) 3-5-001: 067
KEHALANI MAUKA, LLC.

LOT T-1
TMK: (2) 3-5-001: 091
KEHALANI MAUKA, LLC.

B-1 B-2 B-3 B-4 B-5 B-6 B-7

A C-6 C-17 | B C-6 C-17 | E C-6 C-17

1 C-8 | 2 C-8 | 3 C-8 | 4 C-8 | 5 C-8 | 6 C-9 | 7 C-9 | 8 C-9 | 9 C-9

EARTHWORK SUMMARY:

AREA OF CLEARING, GRUBBING, AND GRADING	= 2.04 ACRES
TOTAL EXCAVATION	= 10,600 C.Y.
TOTAL EMBANKMENT	= 1,450 C.Y.

LEGEND:

B-1 — APPROXIMATE LOCATION OF BORING AND NUMBER (SEE DWG. C-24FOR BORING LOGS)

NOTE: AREAS BEYOND THE LIMITS OF GRADING SHALL BE CLEARED AND GRUBBED UP TO THE LIMITS OF GRASSING SHOWN ON THE LANDSCAPING DRAWINGS.

WTP GRADING PLAN

SCALE: 1" = 20'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER TREATMENT PLANT UPGRADES

WTP GRADING PLAN

DESIGNED BY IKN | DRAWN BY DO | CHECKED BY IKN

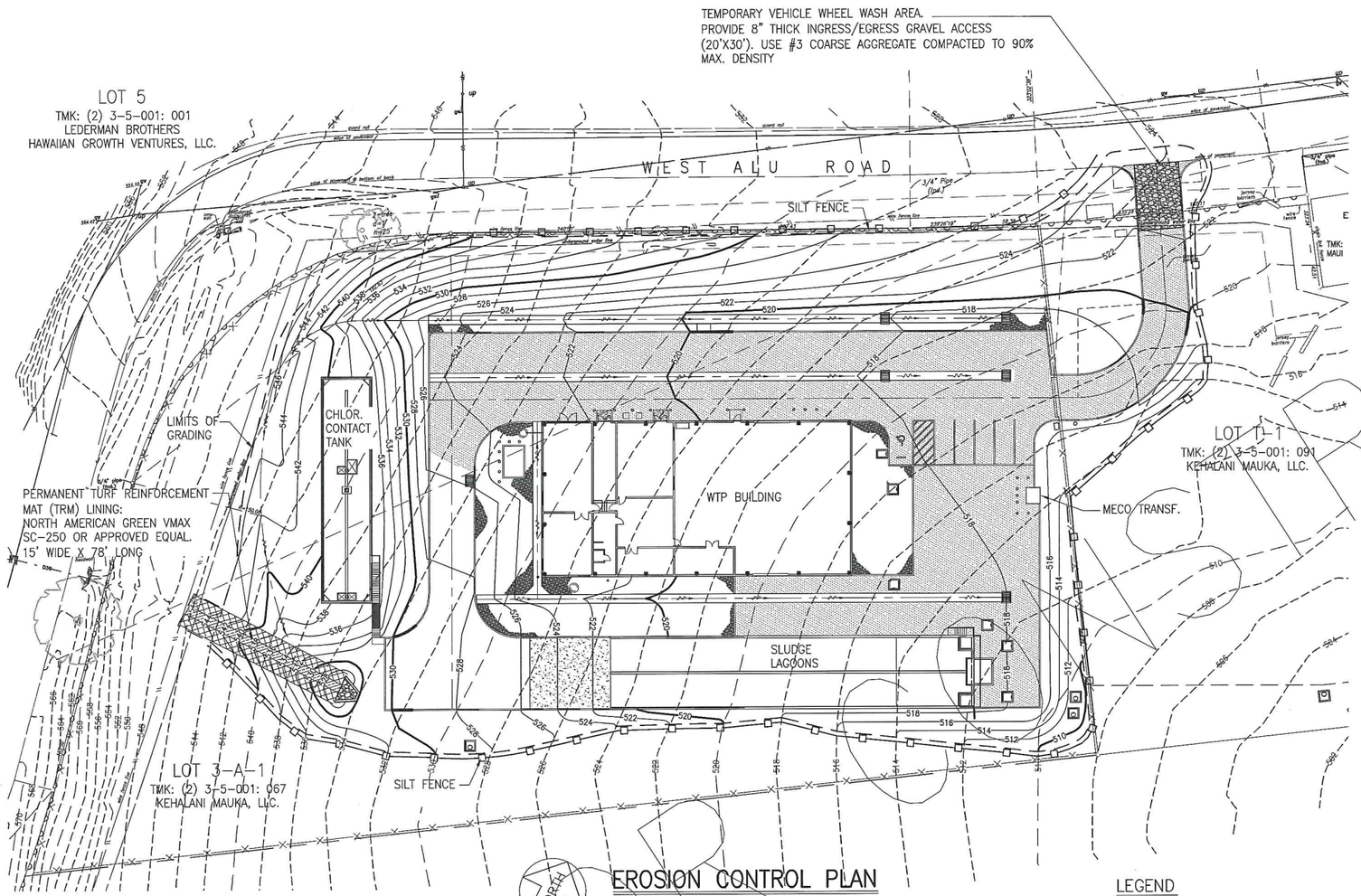
APPROVED _____ DATE

APPROVED _____ DATE

DWG. NO. C-6
SHEET X OF X

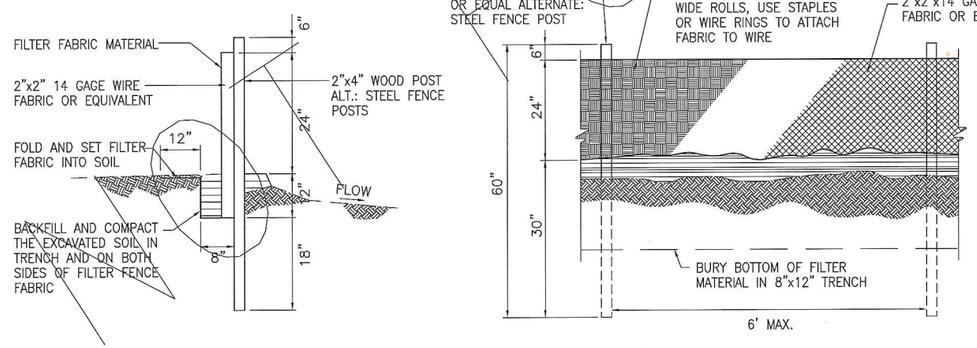
0 1 2
LINE IS 2 INCHES AT FULL SIZE
(if NOT 2-inches : Scale Accordingly)

FNC:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\EA\DRAWINGS\EA\C-6 - WTP GRADING PLAN.DWG Jul 07, 2015-11:33 AM



EROSION CONTROL PLAN

SCALE: 1" = 30'



SILT FENCE DETAIL

NOT TO SCALE

A C-7 | C-7

LEGEND

SILT FENCE

LIMITS OF GRADING

MINIMUM BEST MANAGEMENT PRACTICES

DRAINAGE. HANDLE TO CONTROL EROSION, PREVENT DAMAGE TO DOWNSTREAM PROPERTIES AND RETURN TO THE NATURAL DRAINAGE COURSE IN A MANNER WHICH MINIMIZES SEDIMENTATION OR OTHER POLLUTION TO THE MAXIMUM EXTENT PRACTICABLE.

DUST CONTROL. CONTROL DUST EMISSIONS TO THE MAXIMUM EXTENT PRACTICABLE THROUGH BMP'S SUCH AS WATER SPRINKLING, DUST FENCES, LIMITING AREA OF DISTURBANCE AND TIMELY GRASSING OF FINISHED AREAS.

VEGETATION. RETAIN NATURAL VEGETATION, SPECIALLY GRASSES, WHEREVER FEASIBLE. AVOID STORAGE OR GRUBBED MATERIAL NEAR WATERCOURSES.

EROSION CONTROL. STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MEASURES SUCH AS VEGETATION, RUNOFF DIVERSION, CHECK DAMS, MULCHING, BLANKETS, BONDED FIBER MATRICES, AND VEHICLE WHEEL WASH FACILITIES.

SEDIMENT CONTROL. CAPTURE SEDIMENT TRANSPORTED IN RUNOFF TO MINIMIZE THE SEDIMENT FROM LEAVING THE SITE WITH METHODS SUCH AS SEDIMENT BASIN, SEDIMENT TRAPS, SILT FENCES, SAND BAGS, AND VEGETATED FILTER STRIPS.

MATERIAL AND WASTE MANAGEMENT. PROPERLY STORE TOXIC MATERIAL AND PREVENT THE DISCHARGE OF POLLUTANTS ASSOCIATED WITH CONSTRUCTION MATERIALS.

TIMING OF CONTROL MEASURE IMPLEMENTATION. TIMING OF CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN. DISTURBED AREAS OF CONSTRUCTION SITES THAT WILL NOT BE REDISTURBED FOR TWENTY-ONE DAYS OF MORE WILL BE STABILIZED (GRASSED OR GRAVELED) BY NO LATER THAN THE FOURTEENTH DAY AFTER THE LAST DISTURBANCE.

MATTING. INSTALL EROSION CONTROL MATTING FOR ALL SLOPES GREATER THAN 3H:1V.

ADDITIONAL BEST MANAGEMENT PRACTICES (BMP'S):

1. GRAVEL CONSTRUCTION ENTRANCE FOR EACH INGRESS AND EGRESS.
2. PERIMETER RUNOFF CONTROL.
3. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS INITIATED.
4. CONTRACTOR SHALL CONSTRUCT PROCESS WATER BASIN TO HAVE PROCESS WATER SUCH AS CHLORINATED WATER, HYDROSTATIC TESTING WATER, WASHWATER AFTER CLEANING CONCRETE TRUCKS, ETC. BE CONTAINED WITHIN THE BASIN AND PERCOLATE INTO THE SOIL.
5. CONTRACTOR AND/OR OWNER SHALL COMPLY WITH CHAPTER 11-55, WATER POLLUTION CONTROL, HAWAII ADMINISTRATION RULES, DEPT. OF HEALTH WHICH REQUIRES AN NPDES PERMIT FOR CERTAIN CONSTRUCTION ACTIVITY.
6. CONTRACTOR SHALL OBTAIN APPROVAL OF A GRADING PHASING PLAN BY THE DEPARTMENT OF PUBLIC WORKS & ENVIRONMENTAL MANAGEMENT PRIOR TO CONSTRUCTION.

NOTE:
SEE LANDSCAPING DRAWINGS FOR PERMANENT LANDSCAPE PLANTING

TEMPORARY EROSION CONTROL MEASURES

1. TEMPORARY GROUND COVER SHALL BE APPLIED WITHIN A PERIOD OF 30 CALENDAR DAYS AFTER THE SITE HAS BEEN GRADED, OR BARED OF VEGETATION, OR IF FINAL GRADING OF THE SITE WILL BE SUSPENDED FOR MORE THAN 30 CALENDAR DAYS. ALL COST FOR MAINTAINING IRRIGATING AND REMOVING TEMPORARY EROSION CONTROL MEASURES WILL BE BORNE BY THE CONTRACTOR.
2. THE CONTRACTOR SHALL PROVIDE AND INSTALL ORGANIC EROSION CONTROL FABRIC, SUCH AS JUTE MESH OR APPROVED EQUAL, ON NEW PLANTING AREAS WITH SLOPE RATIOS GREATER THAN 3:1. FABRIC SHALL BE LAID VERTICAL TO THE SLOPE.
3. THE CONTRACTOR MAY USE HYDRO-MULCH TO APPLY THE TEMPORARY GROUND COVER.
4. TEMPORARY GROUND COVER SHALL CONSIST OF 2,000 LBS. PER ACRE WOOD CELLULOSE FIBER MULCH AND 65 LBS. PER ACRE TACKIFIER.

TEMPORARY DUST CONTROL MEASURES

1. EXCAVATION, EMBANKMENT AND IMPORTED MATERIALS SHALL BE KEPT DAMPENED WITH WATER DURING THE GRADING OPERATIONS.
2. THE CONTRACTOR SHALL MAINTAIN A SUITABLE WATER SYSTEM AND DAMPEN THE GRADED OR GRUBBED SITE WITH WATER.
3. AT THE END OF EACH DAY, SEVEN (7) DAYS A WEEK, THE PROJECT SITE SHALL BE KEPT DAMP WITH WATER. THE SITE SHALL BE SUFFICIENTLY DAMPENED SO THAT THE SITE WILL REMAIN MOISTENED DURING THE NIGHT.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

EROSION CONTROL PLAN AND DETAILS

DESIGNED BY IKN DRAWN BY DO CHECKED BY IKN

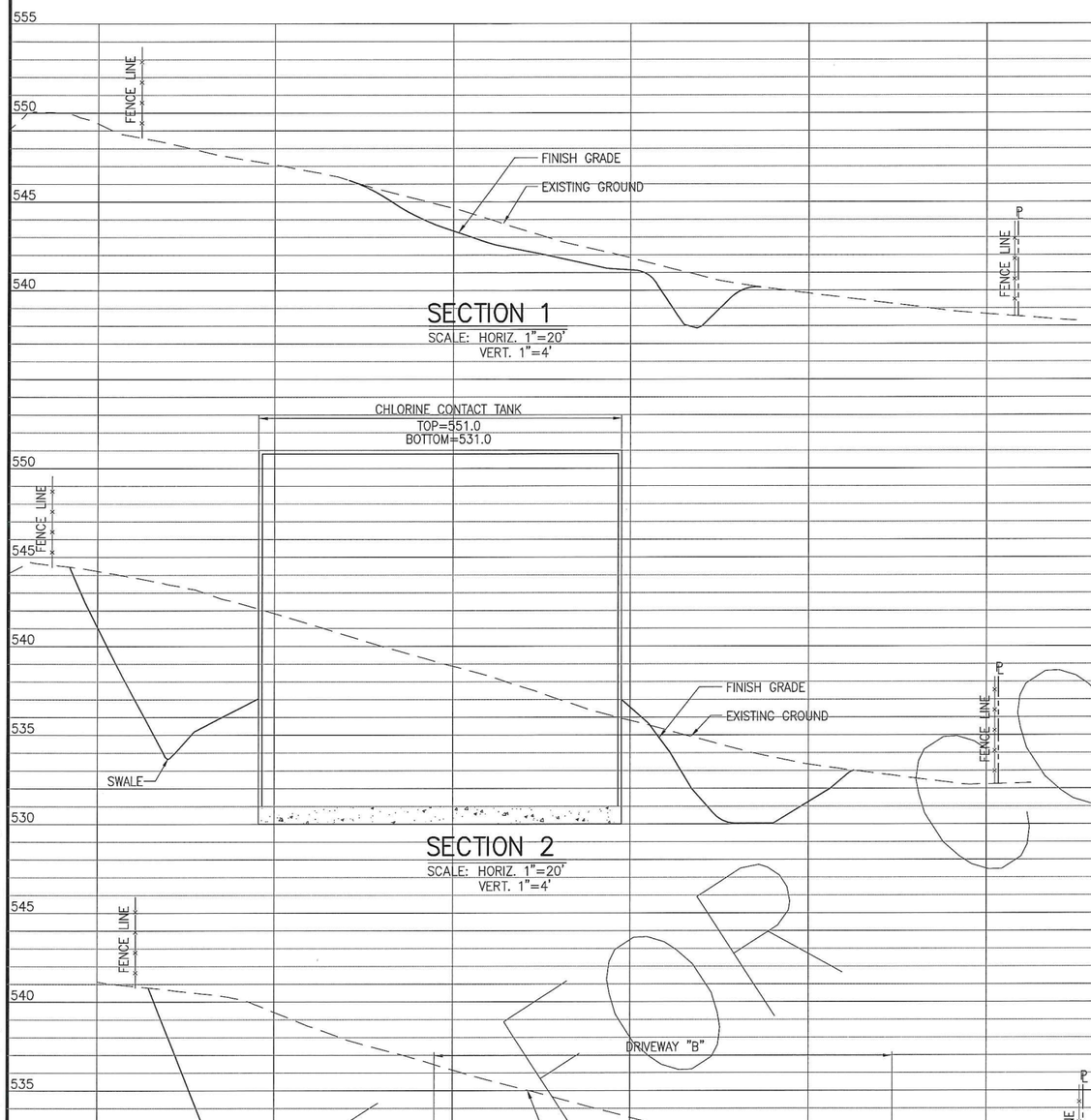
APPROVED _____ DATE

APPROVED _____ DATE

DWG. NO. C-7
SHEET X OF X

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

FNC:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTF\EA\DRAWINGS\EA\C-7 - EROSION CONTROL PLAN.DWG Jul 07, 2015-11:35 AM

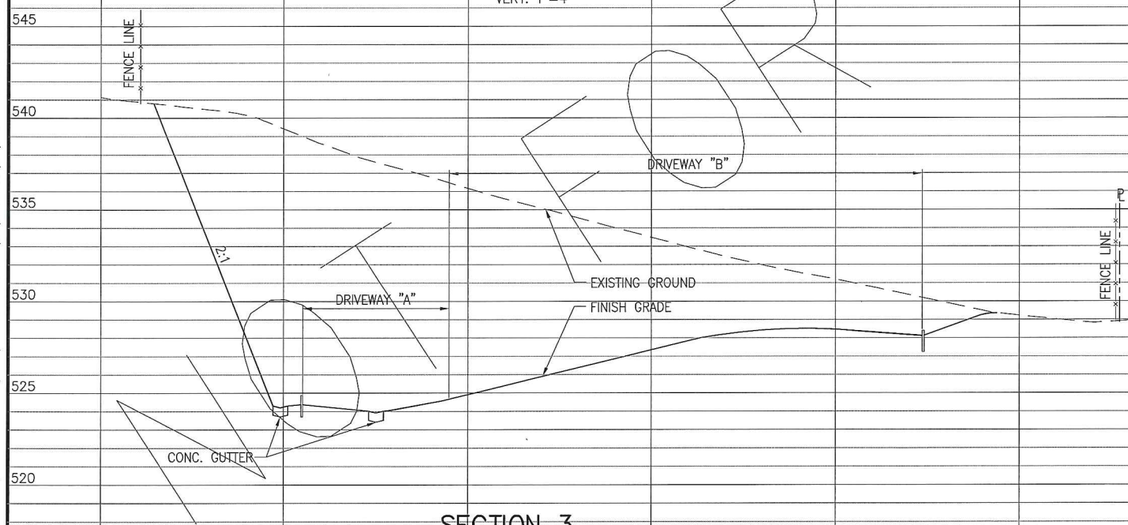


SECTION 1

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

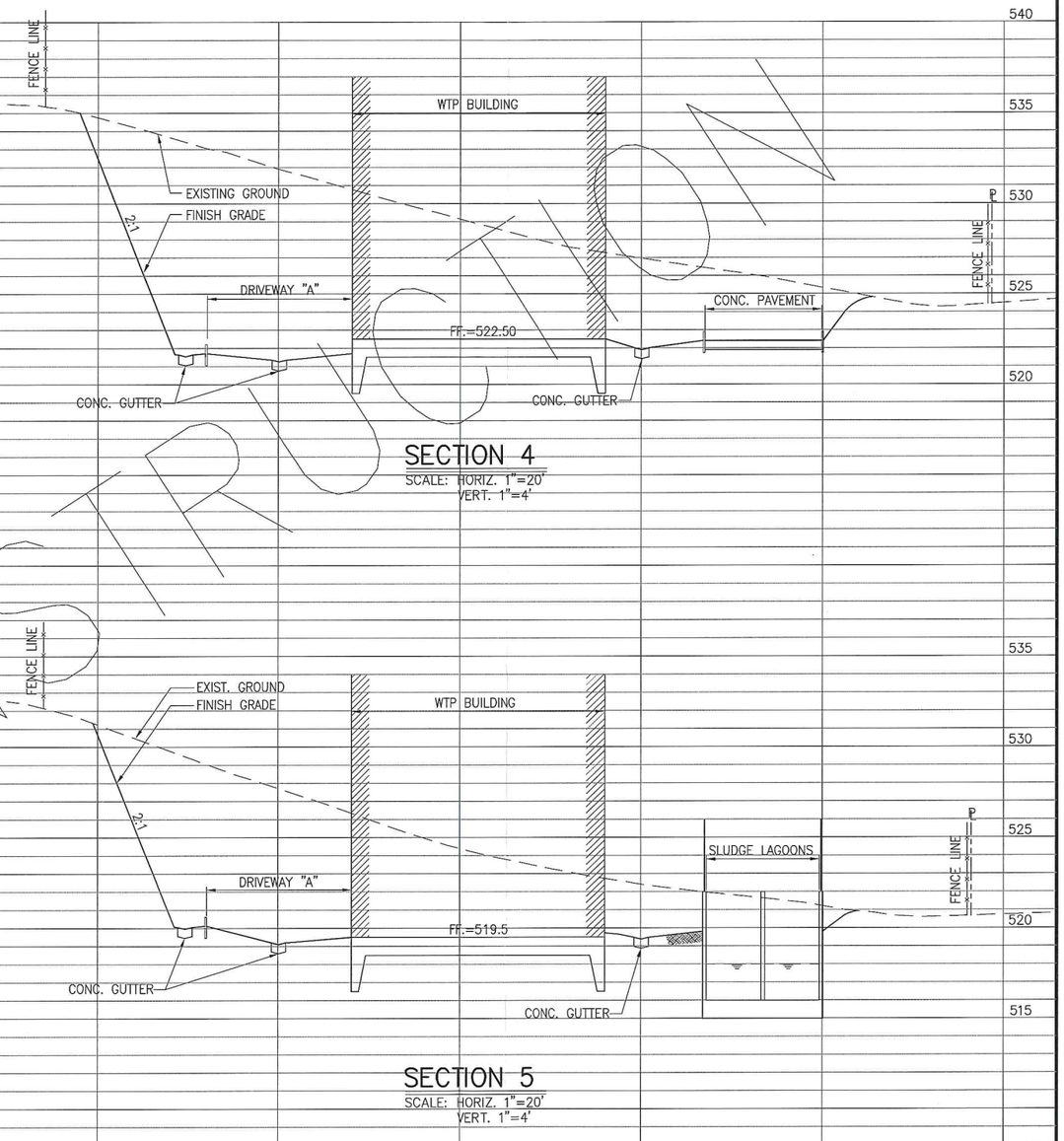
SECTION 2

SCALE: HORIZ. 1"=20'
VERT. 1"=4'



SECTION 3

SCALE: HORIZ. 1"=20'
VERT. 1"=4'



SECTION 4

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

SECTION 5

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

WTP SECTIONS 1–5

DESIGNED BY IKN DRAWN BY DO CHECKED BY IKN

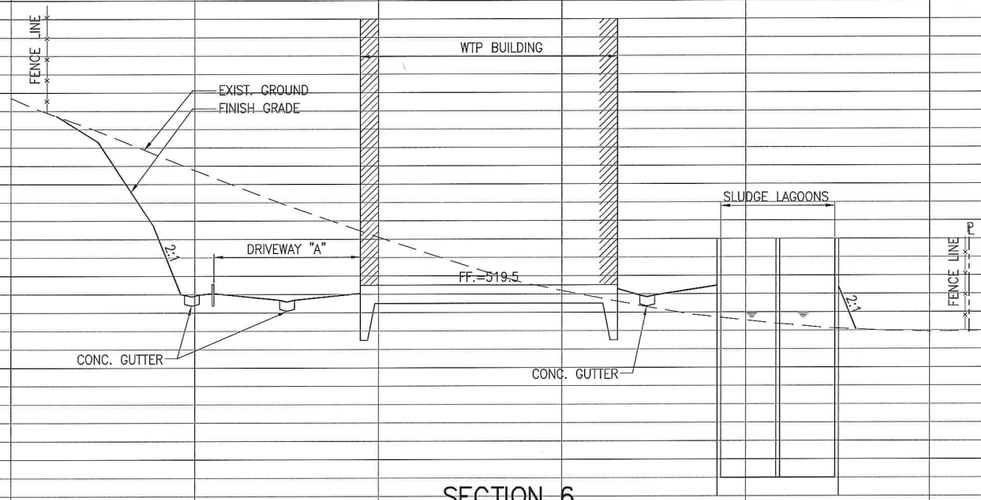
APPROVED _____ DATE

APPROVED _____ DATE

DWG. NO. C-8
SHEET X OF X

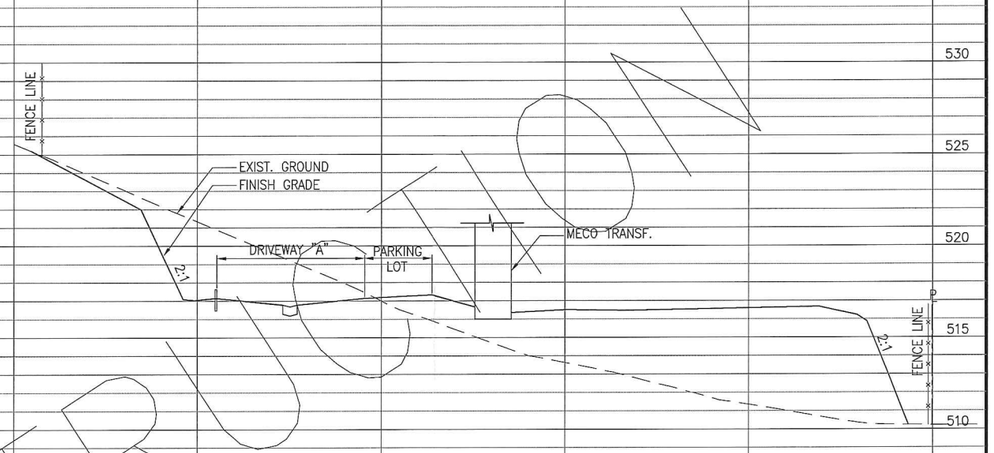
0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

FNC:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\EA\DRAWINGS\EA\C-8 – WTP SECTIONS 1-5.DWG Jul 08, 2015-12:35 PM



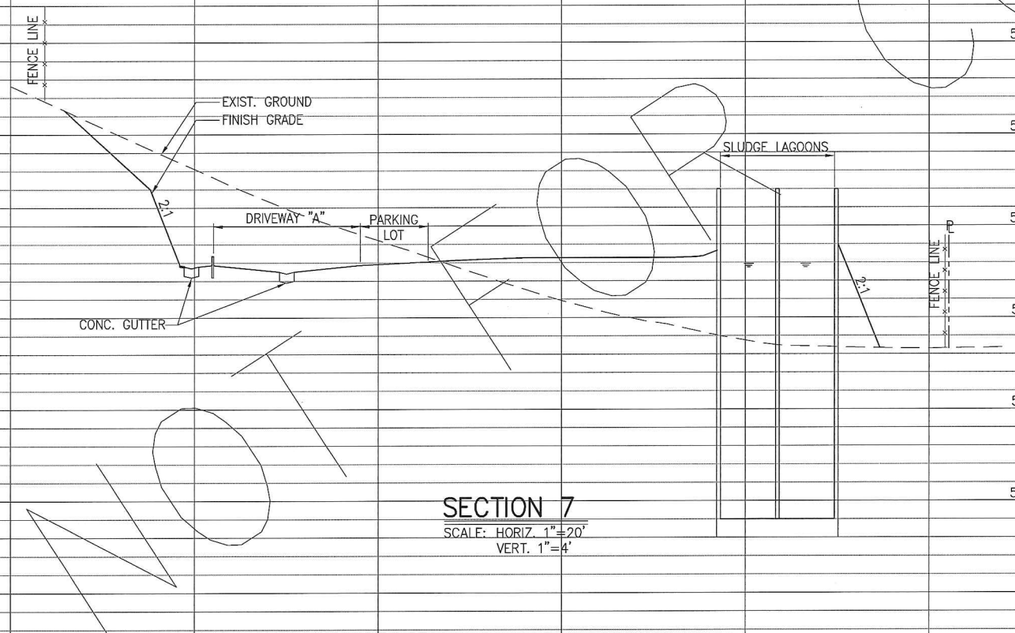
SECTION 6

SCALE: HORIZ. 1"=20'
VERT. 1"=4'



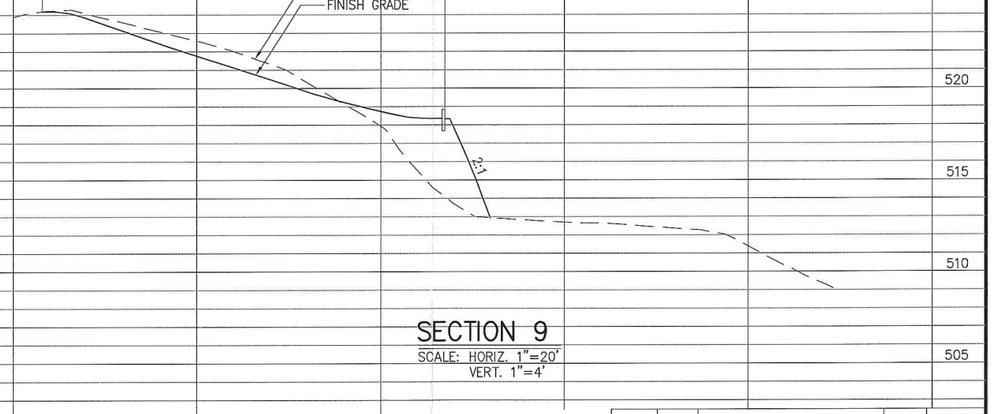
SECTION 8

SCALE: HORIZ. 1"=20'
VERT. 1"=4'



SECTION 7

SCALE: HORIZ. 1"=20'
VERT. 1"=4'



SECTION 9

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

WTP SECTIONS 6–9

DESIGNED BY IKN DRAWN BY DO CHECKED BY IKN

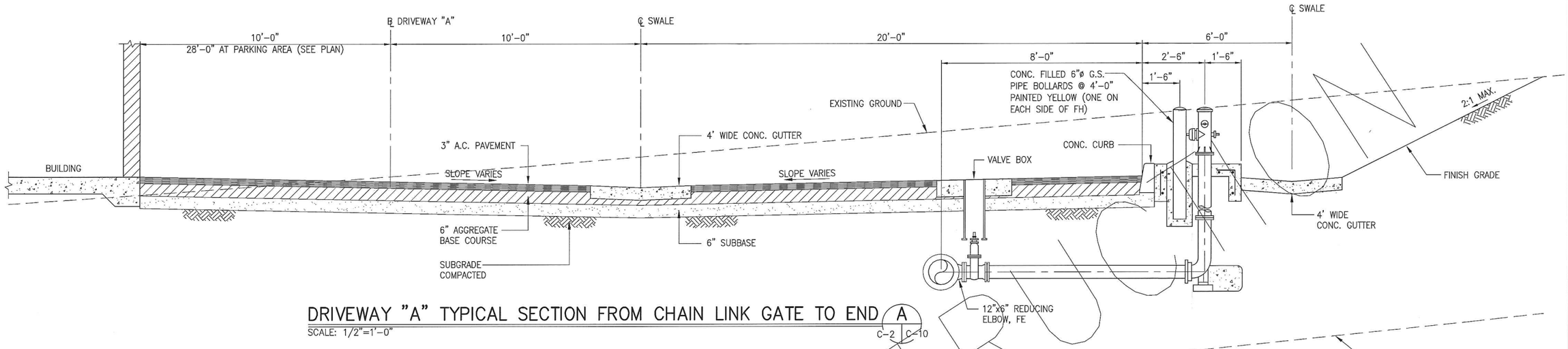
APPROVED _____ DATE

APPROVED _____ DATE

DWG. NO. C-9
SHEET X OF X

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

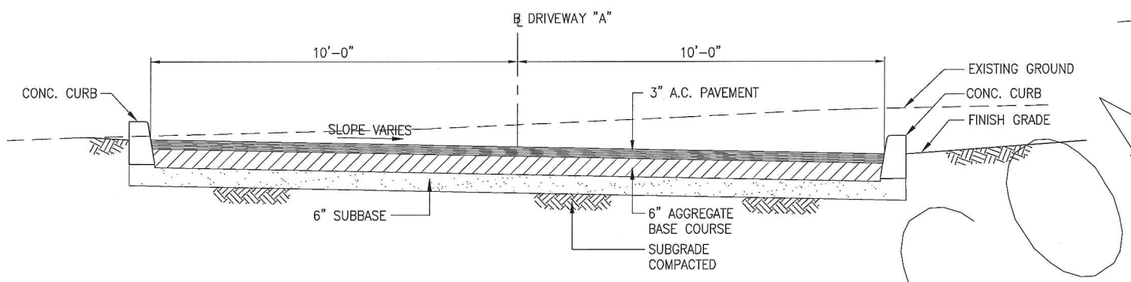
FNC:\2 – WORK FILES\PROJECT FOLDERS\2013\13-002 – IAO WTF\EA\DRAWINGS\EA\C-9 – WTP SECTIONS 6-9.DWG Jul 07, 2015-11:37 AM



DRIVEWAY "A" TYPICAL SECTION FROM CHAIN LINK GATE TO END (A)

SCALE: 1/2"=1'–0"

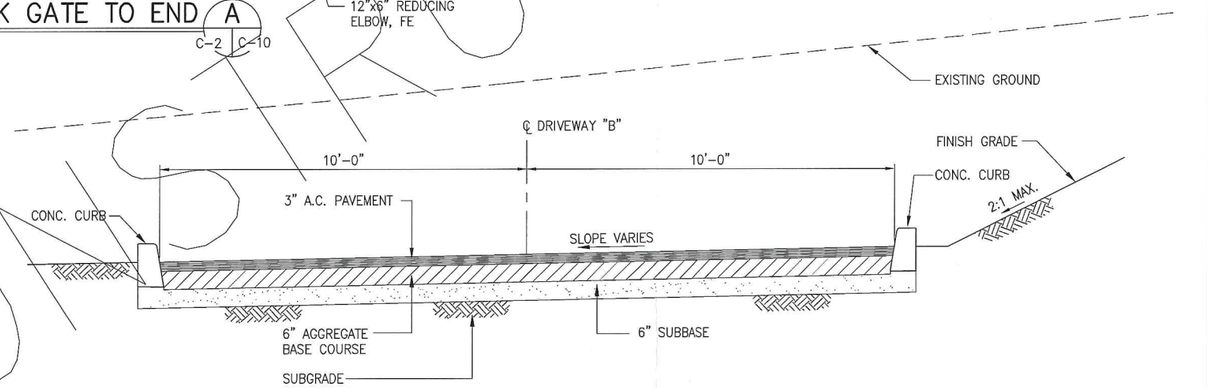
C–2 | C–10



DRIVEWAY "A" TYPICAL SECTION STA. 0+00 TO CHAIN LINK GATE (B)

SCALE: 1/2"=1'–0"

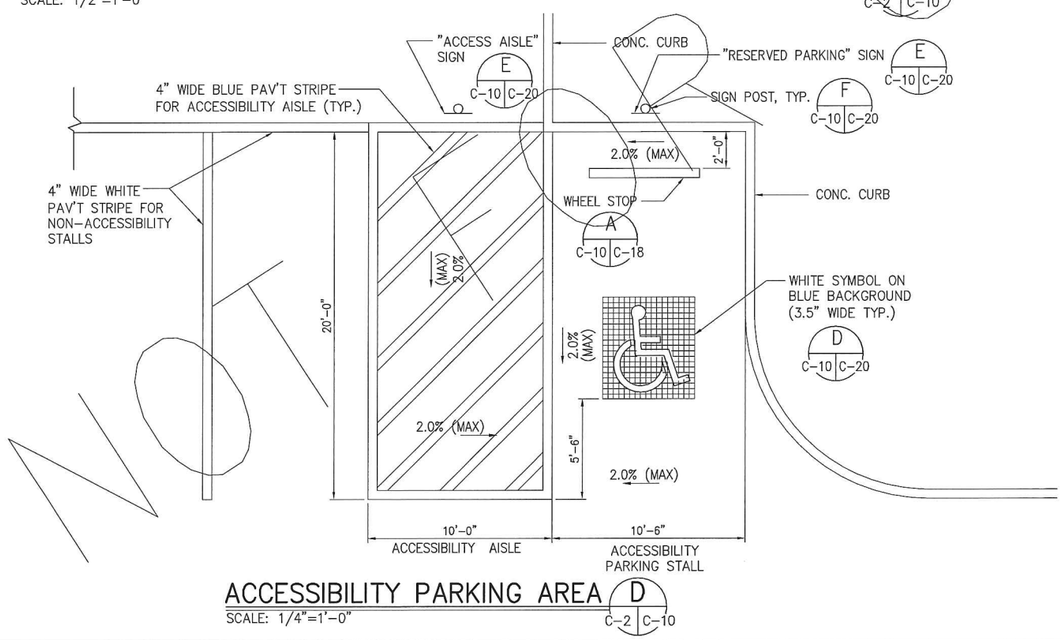
C–2 | C–10



DRIVEWAY "B" TYPICAL SECTION (C)

SCALE: 1/2"=1'–0"

C–2 | C–10



ACCESSIBILITY PARKING AREA (D)

SCALE: 1/4"=1'–0"

C–2 | C–10

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

DRIVEWAY "A" AND DRIVEWAY "B" TYPICAL SECTIONS AND ACCESSIBILITY PARKING AREA

DESIGNED BY IKN | DRAWN BY DO | CHECKED BY IKN

APPROVED _____ DATE

APPROVED _____ DATE

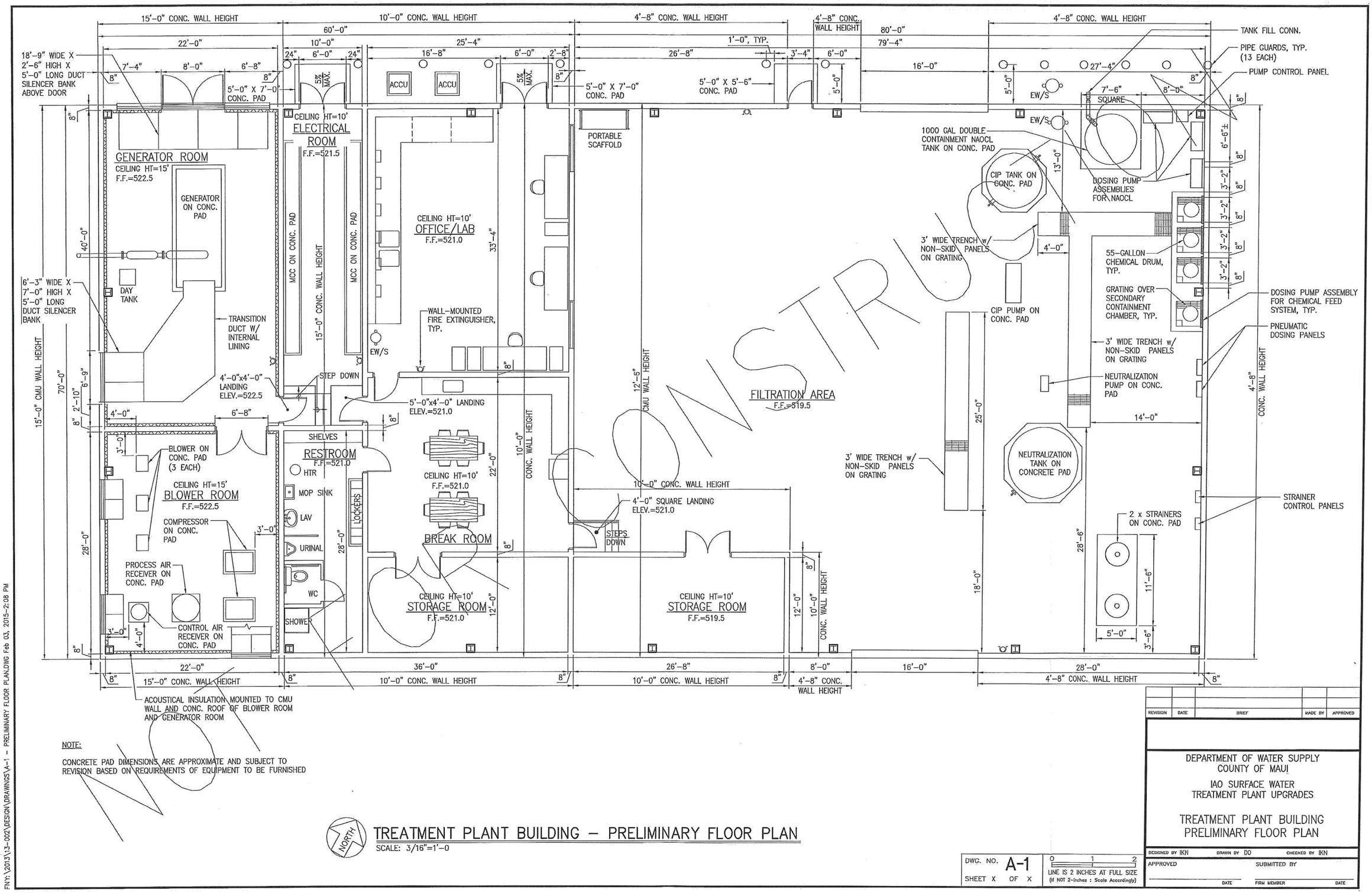
DWG. NO. C-10

SHEET X OF X

0 1 2

LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

FNC:\2 - WORK FILES\PROJECT FOLDERS\2013\13-002 - IAO WTP\EA\DRAWINGS\EA\C-10 - ROAD A AND B TYPICAL SECTIONS.DWG Jul 07, 2015-11:39 AM



NOTE:

CONCRETE PAD DIMENSIONS ARE APPROXIMATE AND SUBJECT TO REVISION BASED ON REQUIREMENTS OF EQUIPMENT TO BE FURNISHED

NORTH

TREATMENT PLANT BUILDING – PRELIMINARY FLOOR PLAN

SCALE: 3/16"=1'-0

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

TREATMENT PLANT BUILDING
PRELIMINARY FLOOR PLAN

DESIGNED BY IKN | DRAWN BY DO | CHECKED BY IKN

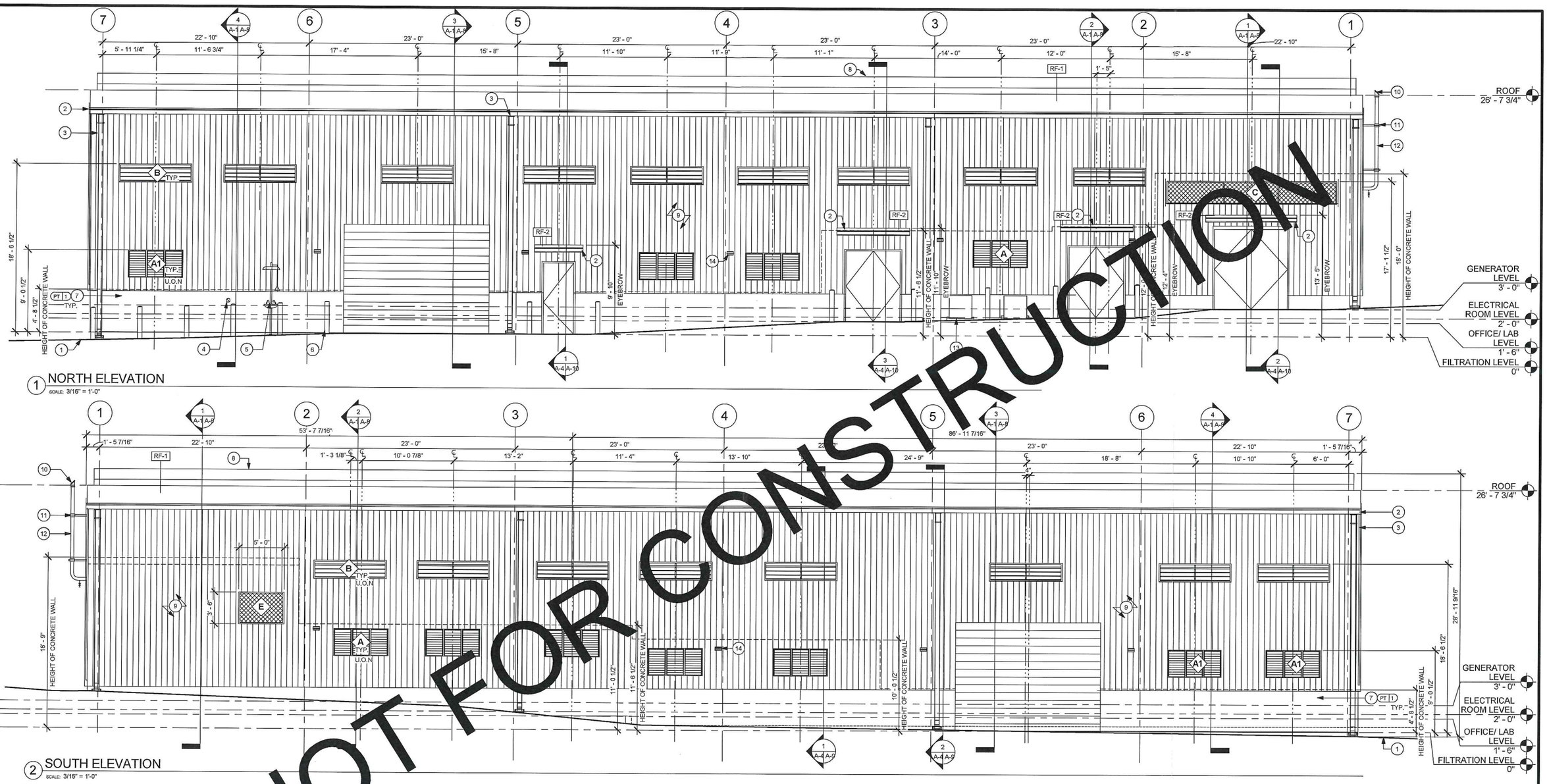
APPROVED | SUBMITTED BY

DATE | FIRM MEMBER | DATE

DWG. NO. A-1
SHEET X OF X

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

F:\Y:\2013\13-002\DESIGN\DRAWINGS\A-1 - PRELIMINARY FLOOR PLAN.DWG Feb 03, 2015-2:08 PM



1 NORTH ELEVATION
SCALE: 3/16" = 1'-0"

2 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

KEYNOTES

1	FINISH GRADE
2	GUTTER, TYP.
3	DOWNSPOUT, TYP.
4	NAOCL TANK FILL CONN., SEE MECHANICAL
5	EMERGENCY SHOWER AND EYEWASH, SEE MECHANICAL
6	PIPE GUARDS, TYP. (13 EACH), SEE CIVIL
7	CONCRETE WALL
8	CONTINUOUS RIDGE VENT
9	PRE-FORMED PRE FINISH METAL PANEL SIDING, TYP.
10	316 S.S. RAIN CAP 1'-6" ABOVE RIDGE VENT, SEE MECHANICAL
11	316 S.S. PIPE SUPPORTS AT 10' O.C. (2 EACH), SEE MECHANICAL
12	316 S.S. GENERATOR EXHAUST PIPE, SEE MECHANICAL
13	ACCU, TYP., SEE HVAC
14	EXTERIOR WALL SCONCE 9' ABOVE FINISH FLOOR, SEE ELECTRICAL, TYP.

REVISION	DATE	BY	CHECKED BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

TREATMENT PLANT BUILDING ELEVATIONS – NORTH AND SOUTH

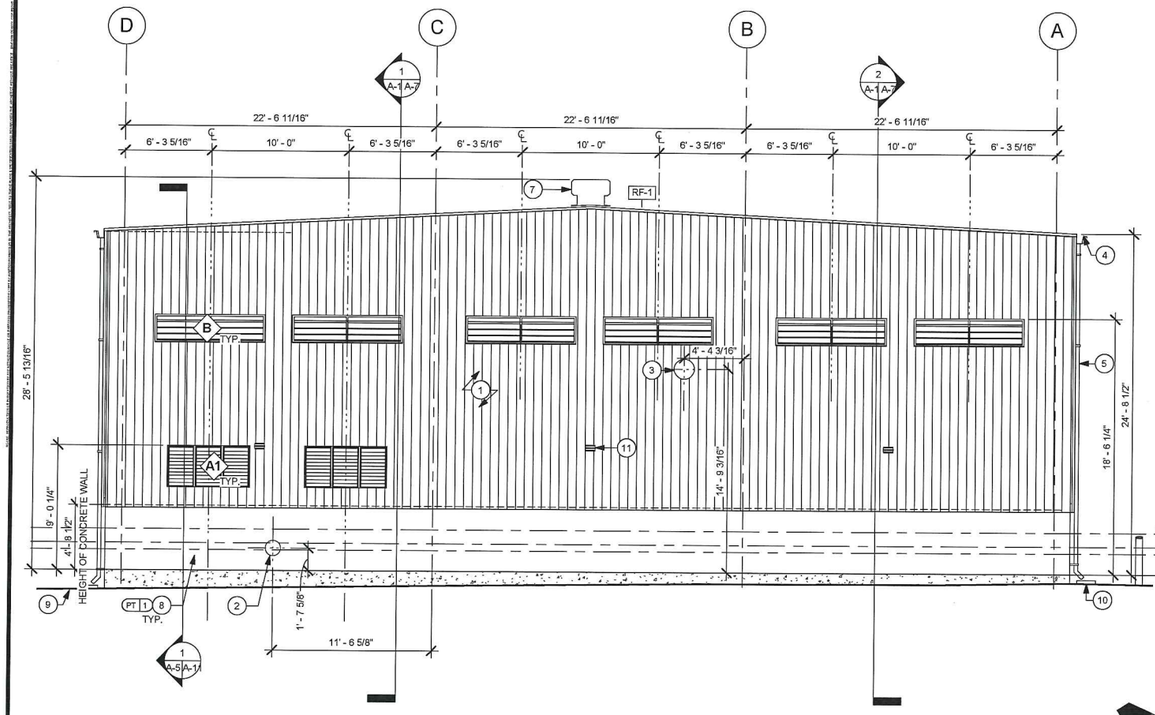
DESIGNED BY: JK | DRAWN BY: JW | CHECKED BY: CO

APPROVED | SUBMITTED BY

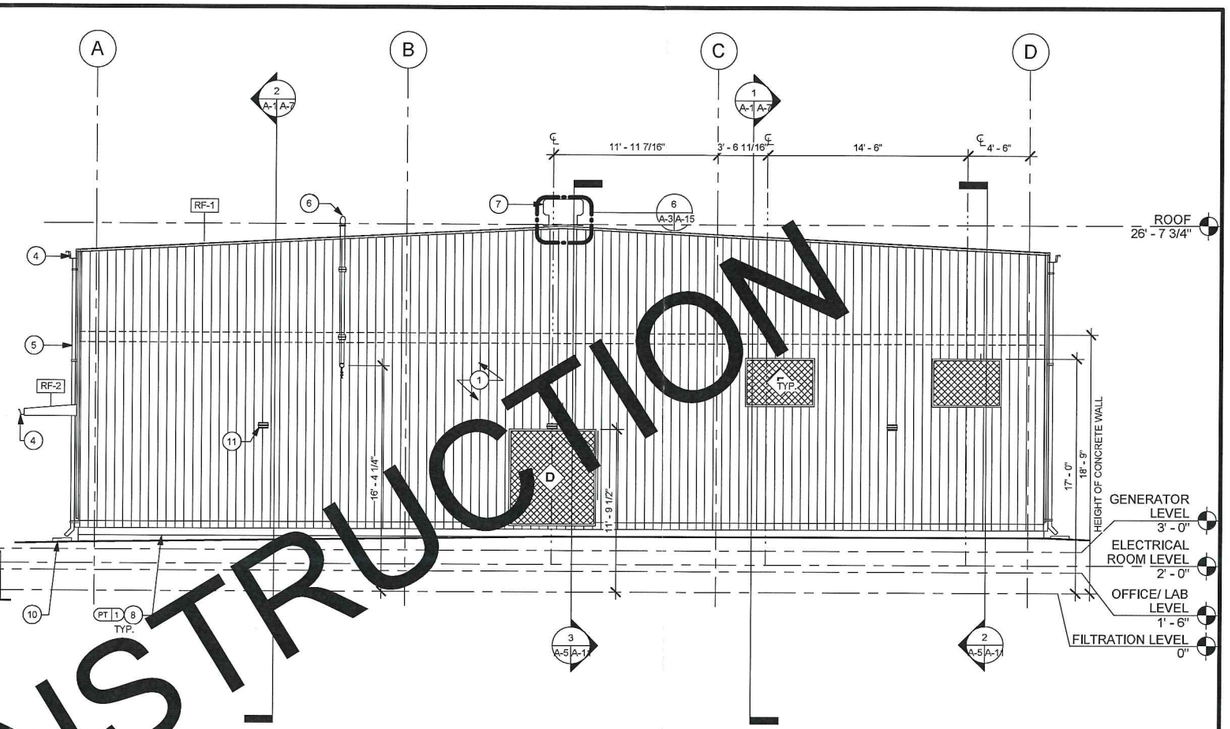
DWG. NO. A-4
SHEET OF X

0 2
USE IS 2 INCHES X 1 FULL SIZE
DO NOT SCALE DRAWING

FILE	POCKET	FOLDER	NO.



1 EAST ELEVATION
SCALE: 3/16" = 1'-0"



2 WEST ELEVATION
SCALE: 3/16" = 1'-0"

KEYNOTES

1	PRE-FORMED PRE FINISH METAL PANEL SIDING, TYP.
2	12" RAW WATER
3	16" FILTERED WATER
4	GUTTER, TYP.
5	DOWNSPOUT, TYP.
6	316 S.S. GENERATOR EXHAUST PIPE, SEE MECHANICAL
7	CONTINUOUS RIDGE VENT
8	CONCRETE WALL
9	FINISH GRADE
10	PRE-CAST SPLASH BLOCK, TYP.
11	EXTERIOR WALL SCONCE 9' ABOVE FINISH FLOOR, SEE ELECTRICAL, TYP.

DWG. NO. A-5
SHEET OF X

0 2
LINE IS 2 INCHES A FULL SIZE
IF NOT 2 INCHES THEN ADJUST SCALE

REVISION	DATE	BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

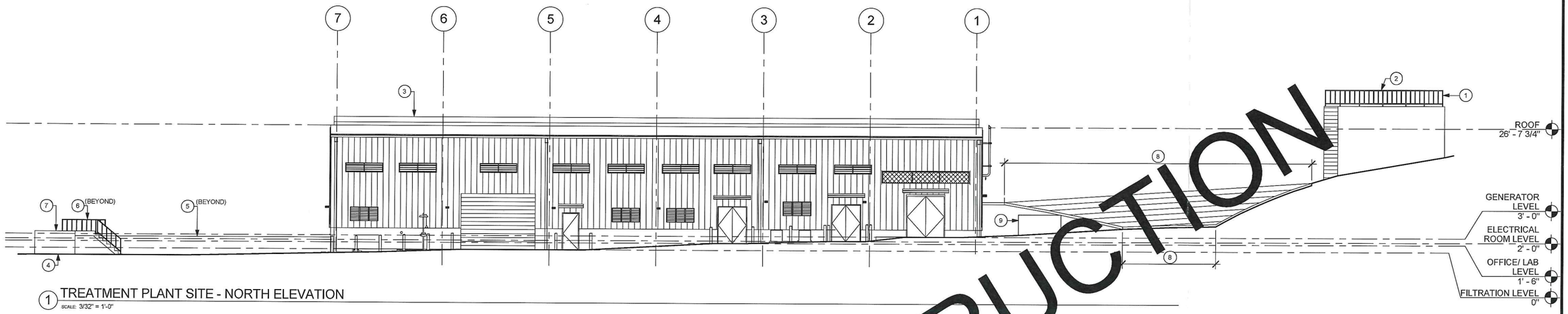
IAO SUR-ACE WATER TREATMENT PLANT UPGRADES

TREATMENT PLANT BUILDING ELEVATION – EAST AND WEST

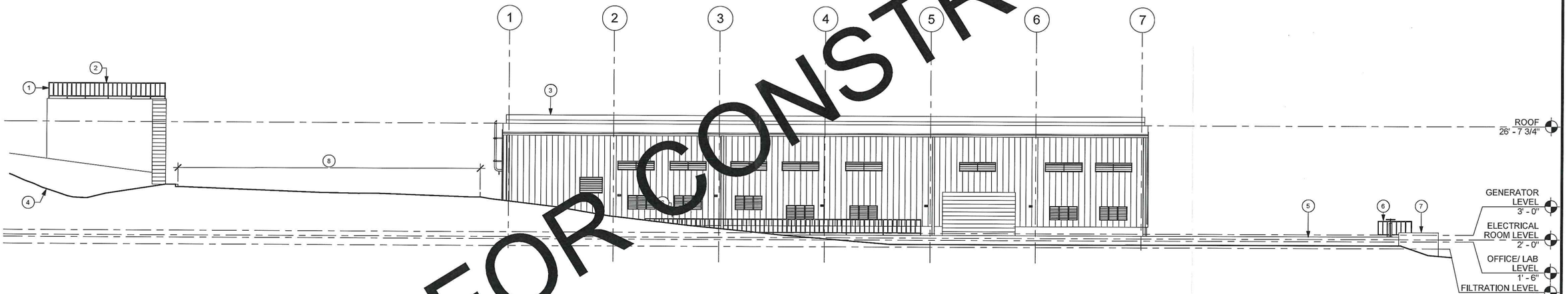
DESIGNED BY: JK | DRAWN BY: DW | CHECKED BY: CC

APPROVED | SUBMITTED BY

FILE	POCKET	FOLDER	NO.



1 TREATMENT PLANT SITE - NORTH ELEVATION
SCALE: 3/32" = 1'-0"



2 TREATMENT PLANT SITE - SOUTH ELEVATION
SCALE: 3/32" = 1'-0"

KEYNOTES

1	CHLORINE CONTACT TANK
2	CHLORINE CONTACT TANK RAILING
3	TREATMENT PLANT BUILDING
4	FINISH GRADE
5	SLUDGE LAGOONS
6	SLUDGE LAGOON RAILING
7	INLET BOX
8	ACCESS ROAD
9	2000 GALLON FUEL TANK, SEE CIVIL

REVISION	DATE	BY	APPROVED

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SUR-ACE WATER
TREATMENT PLANT UPGRADES

TREATMENT PLANT SITE
ELEVATIONS

DESIGNED BY: BKA DRAWN BY: DW CHECKED BY: CO

APPROVED SUBMITTED BY

DWG. NO. A-6
SHEET OF X

0 1 2
LINE IS 2 INCHES A FULL SIZE
DO NOT SCALE DRAWING ADJUST ACCORDINGLY

FILE	POCKET	FOLDER	NO.

Exisiting 'Naturalized' Vegetation to Remain
Typ. Sym.

17,400 s.f. | Common Bermuda Grass/Annual Rye Grass Mixture - Typ. Sym.
Cynodon dactylon/Lolium multiflorum, Respectively
4 Parts Common Bermuda Grass to 1 Part Annual Rye Grass
Seeded @ Rate of 5 lbs./1,000 s.f.

2,500 l.f. | Sunshine Vetiver Grass - Typ. Sym.
6" o.c. | Chrysopogon zizanioides 'Sunshine'
1 quart polybag - 12" ht.

WEST ALU ROAD

Limits of Grading (See Civil Drwgs.) - Typical
Fence - Typ. Sym.
Property Line - Typ. Sym.

4" WIDE CONC. GUTTERS
ASPHALT PAVING - TYPICAL
4" WIDE CONC. GUTTERS

Motorized Sliding Gate
Gate Operator

CHLORINE CONTACT TANK
2000 GAL. FUEL TANK
GENERATOR ROOM
ELEC. ROOM (A/C)
OFFICE/LAB (A/C)
LOT 3-A-1
1.770 ACRES
BREAK ROOM (A/C)
R/R
BLOWER ROOM
STORAGE
STORAGE
FILTRATION AREA
GRAVEL FILL TYPICAL
GRAVEL FILL - TYPICAL
ASPHALT PAVING - TYPICAL
GRAVEL FILL - TYPICAL
ASPHALT PAVING - TYPICAL
SLUDGE LAGOONS

Limits of Grading - Typical
(See Civil Drwgs.)

Drainage Head Wall

Root Barrier - Typ. Sym.
(See Civil Eng'rs. Drwgs)

Limits of Grading - Typ. Sym.

11 ea. | Kukui Tree - Typ. Sym.
30' o.c. | Aleurites moluccana
25 gal., 8 ft. ht., 2" caliper

23,650 s.f. | Common Bermuda Grass - Typ. Sym.
Cynodon dactylon
Seeded @ rate of 4 lbs./1,000 s.f.

Limits of Grassing - Typ. Sym.
Existing 'Naturalized' Vegetation to Remain -Typ. Sym.
Bottom of Existing Bank - Typical
Fence - Typ. Sym.
Property Line - Typ. Sym.

NORTH

PLANTING PLAN
SCALE: 1" = 20'

PREVAILING WIND
CINCH-TIES" OR NYLON STRAP TREE TIES
ORGANIC MULCH (3" DEEP)
6" WATERING BERM
3"
(2) 2"x2"x8' MIN. HARDWOOD STAKES. LOCATE OPPOSITE EACH OTHER. DO NOT DRIVE STAKES THROUGH ROOTBALL.
FINISH GRADE
6"
SLOW RELEASE PLANTING FERTILIZER
4"
DEPTH OF PLANTING PIT SHALL BE 1 1/2" x DEPTH OF ROOTBALL.
BACKFILL MIX AS PER SPECS.
2x DIAMETER OF ROOTBALL

CONTAINER STOCK TREE PLANTING DETAIL
NOT TO SCALE

12'-0" min.

REVISION	DATE	BRIEF	MADE BY	APPROVED

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HAWAII

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI

IAO SURFACE WATER
TREATMENT PLANT UPGRADES

PLANTING PLAN & DETAIL

EXP. 04/30/16

This work was prepared by me or under my supervision and construction of this project will be under my observation. (Observation of construction as defined in Chapter 16-115, Subchapter 1 Definitions of the Hawaii Administrative Rules, "Professional Engineers, Architects, Surveyors, and Landscape Architects.")

DESIGNED BY RYG | DRAWN BY RYG/MA | CHECKED BY RYG

APPROVED _____ DATE
APPROVED _____ DATE

DWG. NO. L-4
SHEET OF

0 1 2
LINE IS 2 INCHES AT FULL SIZE
(If NOT 2-inches : Scale Accordingly)

FN

APPENDIX C.

Drainage Report

DRAINAGE REPORT-
IAO SURFACE WATER TREATMENT PLANT UPGRADES PROJECT

WAILUKU, MAUI, HAWAI'I
TMK: (2) 3-5-001: 067 (POR.) & 091 (POR.)

November 2014

Prepared for:

County of Maui Dept. of Water Supply
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Honolulu • Wailuku • Hilo, Hawai'i

DRAINAGE REPORT-
IAO SURFACE WATER TREATMENT PLANT
UPGRADES PROJECT

Wailuku, Maui, Hawai'i

TMK: (2) 3-5-001: 067 (POR.) & 091 (POR.)

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B. HYDRAULIC CALCULATIONS

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DRAINAGE REPORT
FOR THE
IAO SURFACE WATER TREATMENT PLANT UPGRADES PROJECT

I. INTRODUCTION

The purpose of this report is to present the proposed drainage design for the Iao Surface Water Treatment Plant Upgrades project and to assess if the design meets County of Maui storm drainage regulations.

II. PROPOSED PROJECT

A. LOCATION

The Iao Surface Water Treatment Plant Upgrades project is located in Wailuku, Maui, Hawaii on West Alu Road near the intersection of Iao Valley Road. The proposed project work will primarily take place on a parcel identified as Tax Map Key (TMK): (2) 3-5-001: 067 (por.). Refer to Exhibit 1 for the Location and Vicinity Map.

The existing Iao Water Treatment Plant (WTP) is located east and makai of the project site. Undeveloped Kehalani Mauka lots lie to the south while West Alu Road borders the north and west sides of the site. On the opposite side of West Alu Road, the land consists of steep mountainous hillsides that are forested and undeveloped.

The project site is within the Kehalani Mauka development. Parcel 67 is owned by RCFC Kehalani LLC, Kehalani Mauka LLC, and Wailuku Water Company LLC. The Department of Water Supply (DWS) is in the process of acquiring the land for the Iao Surface WTP Upgrades project. Access to the site will be provided by a driveway off of West Alu Road through the adjacent Parcel 91. DWS will acquire an easement for the driveway and utilities within Parcel 91.

B. PROJECT DESCRIPTION

The existing Iao Surface Water Treatment Plant is located at the site of DWS's Iao 3.0 million gallon (MG) Tank just makai of the proposed project site. The existing WTP was meant to be temporary and was initially sheltered within a large tent that has since been removed, leaving the treatment units exposed to the elements for a number of years. DWS has been looking for a permanent WTP option to replace the temporary plant.

The proposed project involves installing a new treatment plant building, along with an access road, parking area, chlorine contact tank and sludge lagoons; as well as water, sewer and drainage utilities to serve the new project site. This report focuses on the proposed drainage system.

III. EXISTING CONDITIONS

A. TOPOGRAPHY AND SOIL CONDITIONS

The project site is currently undeveloped and is covered with dense high grass. There is a pull-off on West Alu Road, but no roads actually enter the site.

The land slopes in an easterly direction with an average slope of approximately nine (9) percent. Elevations range from 508 to 560 feet mean sea level (msl). West Alu Road runs along the north and west borders of the site and is situated slightly higher.

The Natural Resource Conservation Service (NRCS) soil type found in the proposed project area is Wailuku silty clay (WvB). According to the NRCS, a representative soil profile consists of at least 60 inches of silty clay with no bedrock or groundwater. Wailuku soils are well drained and permeability is moderate. The Hydrologic Soil Group (HSG) for runoff is Group C.

A geotechnical investigation was completed on the project site by Hirata & Associates. Soil borings from April of 2014 showed that the soil on the site generally consists of about eight to twelve feet of reddish brown clayey silt over a layer of completely weathered rock that has degraded into a similar clayey silt soil. One soil boring found weathered rock that was highly to completely weathered at a depth of 21 feet. No groundwater or seepage was encountered during the soil borings.

B. CLIMATE AND RAINFALL

The climate in the vicinity of Wailuku is relatively sunny and warm, with average temperatures varying from a low of 63 degrees Fahrenheit in the winter to a high of 88 degrees in the summer. The annual rainfall is around 37 inches, making the climate semi-arid. The rainfall is also highly seasonal, with 90 percent of the annual rainfall coming between October and May. The 10 and 50-year, 1-hour rainfall is 2.5 and 3.6 inches respectively.

The project site is exposed to prevailing tradewinds coming from the northeast approximately 80 to 85 percent of the time. These tradewinds average 10 to 15 miles per hour during the afternoons with lighter winds during the mornings and nights. Between October and April, southerly winds of Kona storms may be experienced.

C. DRAINAGE

As mentioned previously, the site is currently undeveloped and contains no impervious surfaces. Site runoff drains overland to the east through the vacant open land. It drains as sheet flow and there are no drainage ways or areas of concentrated flow. Normally most runoff is infiltrated into the open field land but in intense storm events runoff may reach and enter the Waihee Ditch, which is located approximately 600 feet makai of the site. The Waihee Ditch flows to Waiale Reservoir via the Hopoi Chute and also to irrigated agricultural fields.

The mountainous offsite land above West Alu Road also contributes runoff to the project site. Offsite area O-1 drains off the steep hillsides and is intercepted by a roadside ditch on the mauka side of West Alu Road. The ditch runoff is eventually collected by a 36-inch culvert, which conveys the runoff under the roadway and into the project site. This runoff currently disperses into the open field land. Offsite Area O-2 is located to the northwest and sheet flows off West Alu Road and into the site. Offsite Area O-3 is an offsite area on the existing WTP site where the new WTP driveway is to be installed.

The County of Maui stormwater rules state that drainage areas under 100 acres are to be designed and analyzed for the 10 or 50-year storm. Since the project drainage areas are less than 100 acres, the 10-year storm was used for design of drainage systems and for comparison of existing and proposed site runoff. The 10-year design storm can be used to design the storm drain systems, however 50-year design must be used for sumps or low points.

The results of the hydrologic analysis are summarized in Table 1 below:

Table 1: Existing Conditions, 10-Year Runoff

Drainage Area	Contributing Area (ac)	Existing Q 10 (cfs)	Flows To
Drainage Area 1	2.251	4.15	Waihee Ditch
Drainage Area O-1	16.6	27.80	Waihee Ditch
Drainage Area O-2	2.3	4.98	Waihee Ditch
Drainage Area O-3	0.118	0.37	Waihee Ditch
TOTAL TO WAIHEE DITCH	**21.269**	**37.30**	

See Exhibit 2 for the Existing Conditions Drainage Area Map and Exhibit 4 for the Offsite Drainage Area Map. Hydrology Calculations can be found in Appendix A.

D. FLOOD ZONE

The project site is not within any Federal Emergency Management Agency (FEMA) flood zone area. The entire area lies within Zone X, which are areas determined to be outside the 0.2 percent annual chance (500-year) floodplain.

Flood zone classifications are based on FEMA Flood Insurance Rate Map (FIRM) number 1500030391E, revised September 19, 2012. Refer to Appendix D for a Flood Hazard Assessment Report (FHAT).

IV. PROPOSED IMPROVEMENTS

A. GRADING

The site grading will feature excavation on the mauka end and embankment on the makai end so that a relatively level pad area can be provided for the development of the new water treatment plant. Embankment slopes will be limited to two feet horizontal to one foot vertical. No retaining walls will be used. The excavation and embankment volumes will be 10,601 and 1,447 cubic yards (cy) respectively for a net volume of 9,154 cy of excess material. The maximum cut will be about 16 feet and the maximum embankment will be about 8 feet.

B. DRAINAGE

As mentioned previously, the Iao Surface Water Treatment Plant Project is within the Kehalani Mauka Development. The Kehalani Mauka Development has an approved drainage master plan by Warren S. Unemori Engineering (see attached Exhibit 5 from Unemori's drainage master plan). The master plan report is titled "*Drainage Report, Kehalani Offsite Drainage System- Phase 1, Wailuku, Maui, Hawaii*", and was last revised in January 2004. The report designed the current back-bone drainage system that collects and conveys Kehalani Mauka Development runoff to a downstream stormwater management system. The report also designed the downstream stormwater management system, which includes the 490 acre-foot Waikapu Retention Basin located adjacent to Waiale Road.

The runoff from the proposed project site and its offsite contributing areas will be collected by a new onsite storm drain system. A 36-inch inlet headwall will collect runoff coming into the site from the existing 36-inch West Alu Road culvert. Eight grated drain inlets will collect runoff from the project site plus offsite areas O-2 and O-3. The proposed storm drain system will then convey

runoff approximately 1500 feet to Kehalani Parkway where it will connect into the 54-inch storm drain located within the roadway. The storm drain flow is then conveyed to the Waikapu Retention Basin located near Waiale Road.

Management of peak runoff is provided by the Waikapu Retention Basin, which is designed to fully retain the 100-year, 24-hour runoff from the full build-out of all phases of the Kehalani Mauka Development plus its mauka offsite contributing areas. The runoff from this project will be retained in the basin.

The proposed project design conforms to what was assumed in the drainage master plan report. The drainage master plan assumed a runoff curve number of 85 for all of the fully developed Kehalani Mauka Development, which equates to 45 percent impervious coverage over hydrologic soil group C soils. The proposed project site will have 47 percent impervious, which is roughly in line with the assumed average.

Since this project conforms to the drainage design set forth in the approved Kehalani Mauka Development drainage master plan, it therefore also meets the requirements listed in the County of Maui Storm Drainage Manual.

The proposed conditions runoff is summarized in Table 2 on the following page. Note that the proposed storm drain system runoff will be completely retained such that there will be zero discharge to any downstream drainage system.

Table 2: Prop. Conditions, 10-Year Runoff

Drainage Area	Contributing Area (ac)	Prop. Q 10 (cfs)	Flows To
Drainage Area 1	0.115	0.84	DI D-1
Drainage Area 2	0.260	2.05	DI C-1
Drainage Area 3	0.081	0.32	DI B-3
Drainage Area 4	0.134	1.10	DI B-2
Drainage Area 5	0.294	1.06	DI E-2
Drainage Area 6	0.419	2.86	DI E-1
Drainage Area 7	0.456	1.53	Headwall A
Drainage Area 8	0.151	0	Lagoons
Drainage Area 9	0.341	1.21	Waihee Ditch
Drainage Area O-1	16.6	27.80	Headwall A
Drainage Area O-2	2.3	4.98	DI E-2
Drainage Area O-3	0.118	0.58	DI B-2
TOTAL TO WAIHEE DITCH	**0.341**	**1.21**	**(36 cfs Decrease)**
TOTAL TO PROP. STORM DRAIN SYSTEM	**20.928**	**43.12**	**(43 cfs Increase)**

Note: 1. The sludge lagoon has an open top and retains what rainfall lands on it.

2. The Proposed Storm Drain System runoff will be fully retained in the existing Offsite Waikapu Retention Basin such that there will be zero discharge to any downstream drainage system.

A hydraulic analysis was also completed on the proposed storm drain system. Calculations show that the pipes are adequately sized for the 10-year storm. Additionally the two sump drain inlets (DI B-2 and DI B-3) and the inlet headwall (Headwall A) have adequate intake capacity for the 50-year storm.

See Exhibit 3 for the Proposed Conditions Drainage Area Map. Refer to Appendix A for Hydrology Calculations and Appendix B for Hydraulic Calculations.

C. RUNOFF WATER QUALITY

Water quality treatment is also provided and will comply with the County's recently adopted "Rules for the Design of Storm Water Treatment Best Management Practices". Since the existing Waikapu Retention Basin has capacity to completely retain the 100-year, 24-hour storm, it is inferred that the one-inch water quality storm runoff is also fully retained. All suspended solids and potential pollutants will be captured in the basin and will not contribute to any downstream drainage-ways. Refer to Appendix C for water quality calculations.

A maintenance plan will be developed for managing the BMPs on the future site. The plan will include requirements for removing accumulated sediments and debris, maintaining vegetation, and performing regular inspections so that the BMPs operate effectively into the future.

D. EROSION CONTROL

Temporary erosion control measures will be incorporated during construction to minimize soil loss and erosion hazards. Best Management Practices may include temporary sediment basins, temporary diversion berms and swales to intercept runoff, silt fences, dust fences, slope protection, stabilized construction entrances and truck wash-down areas. Periodic water spraying of loose soils will be employed to minimize air-borne dirt particles. The project will also need to apply for and meet the requirements of a National Pollution Discharge Elimination System (NPDES) permit.

V. CONCLUSION

The proposed improvements for this project will be designed in accordance with the Department of Public Works (DPW) Storm Drainage Rules. The proposed storm drain system will have adequate capacity and the post-development runoff will be retained. Erosion control and water quality measures will be provided to minimize pollution during and after construction. The project will also comply with the County's recently adopted "Rules for the Design of Storm Water Treatment Best Management Practices".

Based on the information presented in this report, the drainage design for this project will have no adverse effects on the existing facilities or on the surrounding environment.

REFERENCES:

1. Department of Public Works & Waste Management, County of Maui. (November 1995). *Rules for the Design of Storm Drainage Facilities in the County of Maui*, Title MC-15, Subtitle 01, Chapter 4.
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3. USDA, Natural Resources Conservation Service (formerly Soil Conservation Service) in Cooperation with the University of Hawaii Agricultural Experiment Station. (August 1972). *Soil Survey of Island of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.*
4. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at: http://websoilsurvey.nrcs.usda.gov/. Accessed 01/08/2014.
5. Federal Emergency Management Agency. (September 19, 2012). *Flood and Insurance Rate Map, Maui County, Hawaii.* Map Number 1500030391E.
6. State of Hawaii, Department of Land and Natural Resources, Engineering Division, National Flood Insurance Program (NFIP). Flood Hazard Assessment Tool. Available online at: http://gis.hawaiinfip.org/FHAT, Accessed 11/07/2014.
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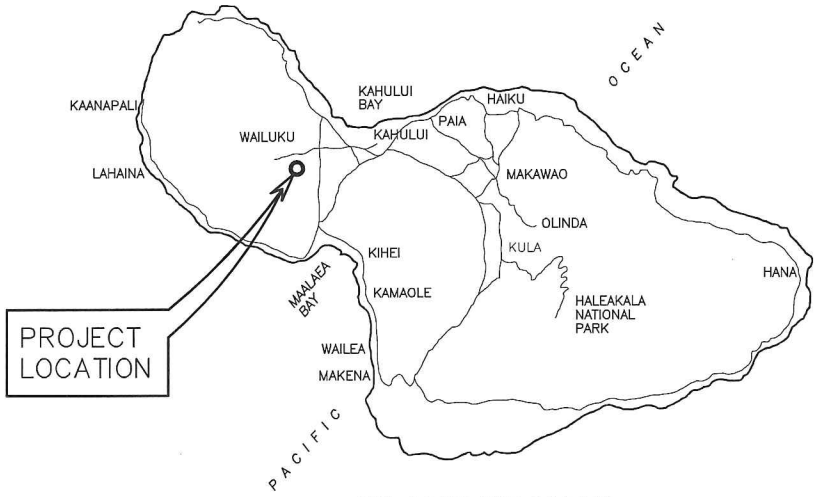
8. Giambelluca TW, Chen Q, Frazier AG, Price JP, Chen Y-L, Chu P-S, Eischeid J., and Delparte, D. 2011. The Rainfall Atlas of Hawai'i. Available online at http://rainfall.geography.hawaii.edu. Accessed 11/07/2014.
9. Warren S. Unemori Engineering, Inc. (January 2004). *Kehalani Offsite Drainage System- Phase 1, Wailuku, Maui, Hawaii.*
10. Warren S. Unemori Engineering, Inc. (May 28, 2013). *Project Plans: Kehalani Parkway - Mauka Loop.*
11. Hirata and Associates, Inc. (June 18, 2014). *Foundation Investigation, Iao Surface Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii, DWS Job No. 12-03.*
12. Munekiyo & Hiraga, Inc. (October 25, 2013). *Letter: Early Consultation Request for Proposed Iao Water Treatment Plant Upgrades, Wailuku, Maui, Hawaii; DWS Job No. 12-03; TMK (2) 3-5-001:067 (por.) and 091 (por.).*

EXHIBITS

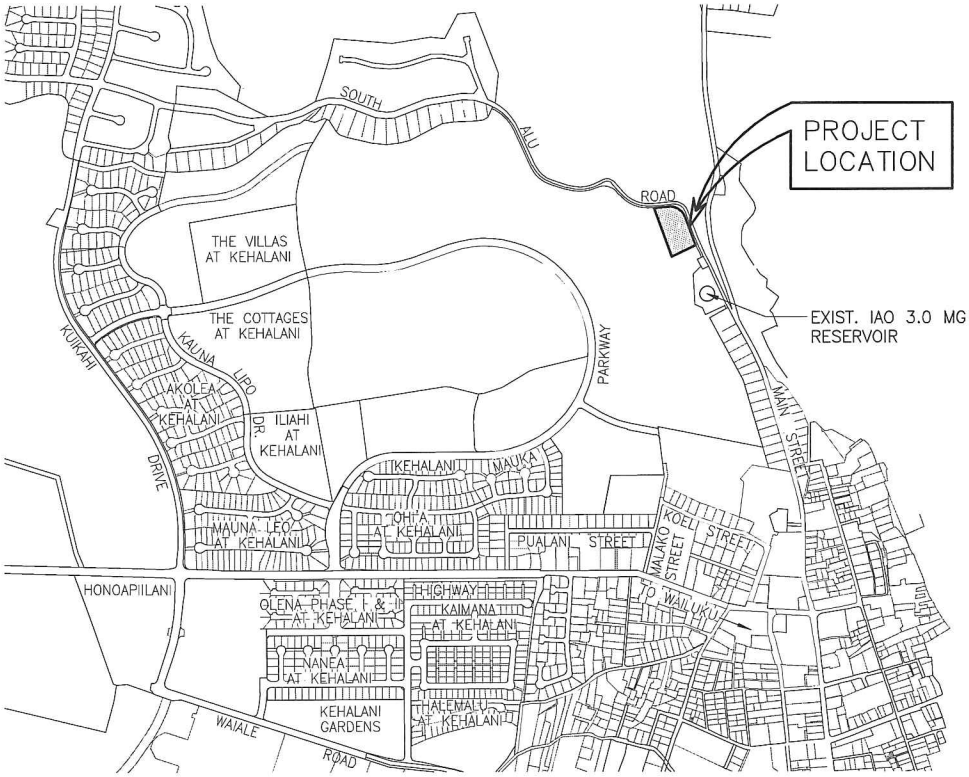


ISLAND OF MAUI

NORTH

LOCATION MAP

NOT TO SCALE



NORTH

VICINITY MAP

NOT TO SCALE

DRAINAGE REPORT

IAO SURFACE WATER TREATMENT PLANT UPGRADES

WAILUKU, MAUI, HAWAI'I

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

LOCATION AND VICINITY MAP

EXHIBIT

1

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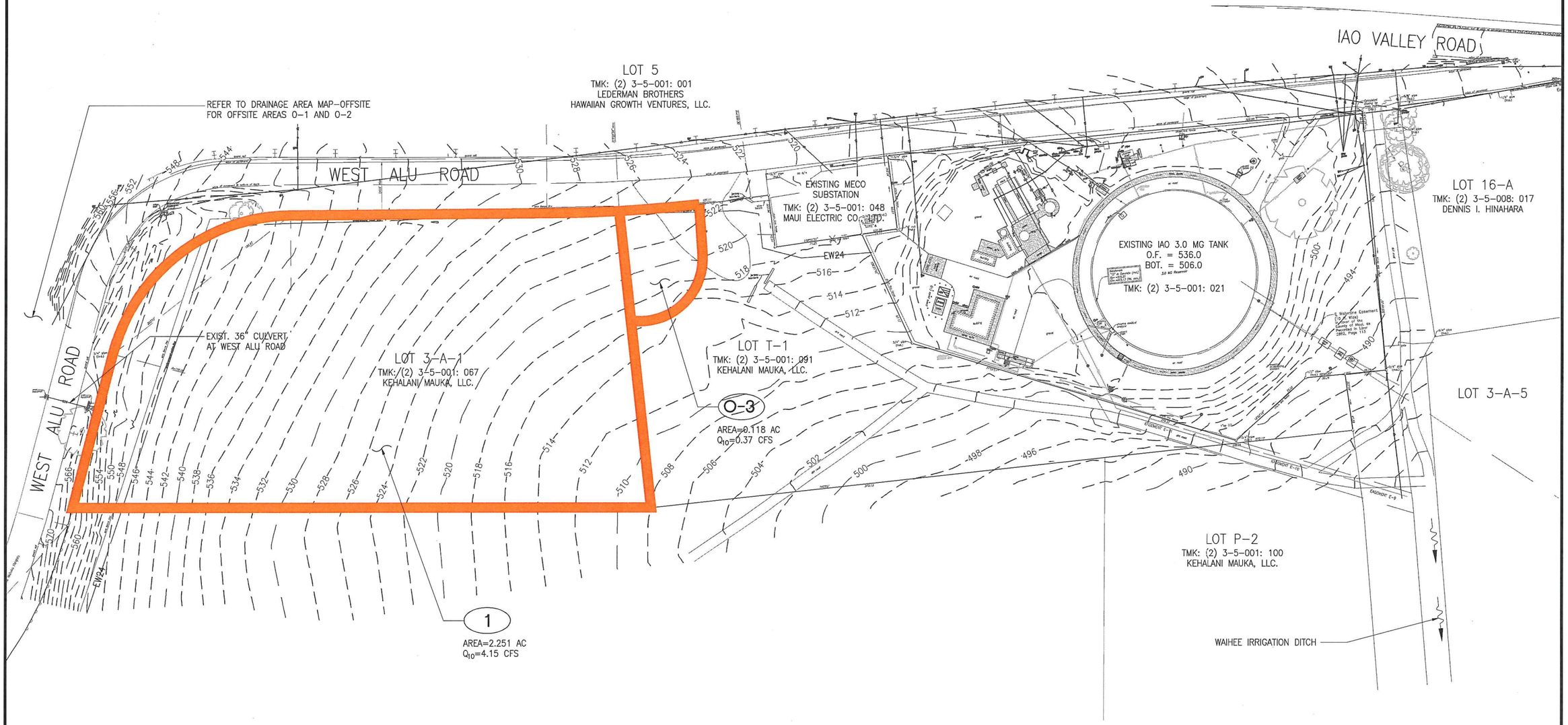
JOB NO. 13-002

NOVEMBER 2014



DRAINAGE AREA MAP-EXISTING CONDITIONS

SCALE: 1" = 80'

0 1

LINE IS 1 INCH AT FULL SIZE
(If NOT 1-inch : Scale Accordingly)

DRAINAGE REPORT
IAO SURFACE WATER
TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

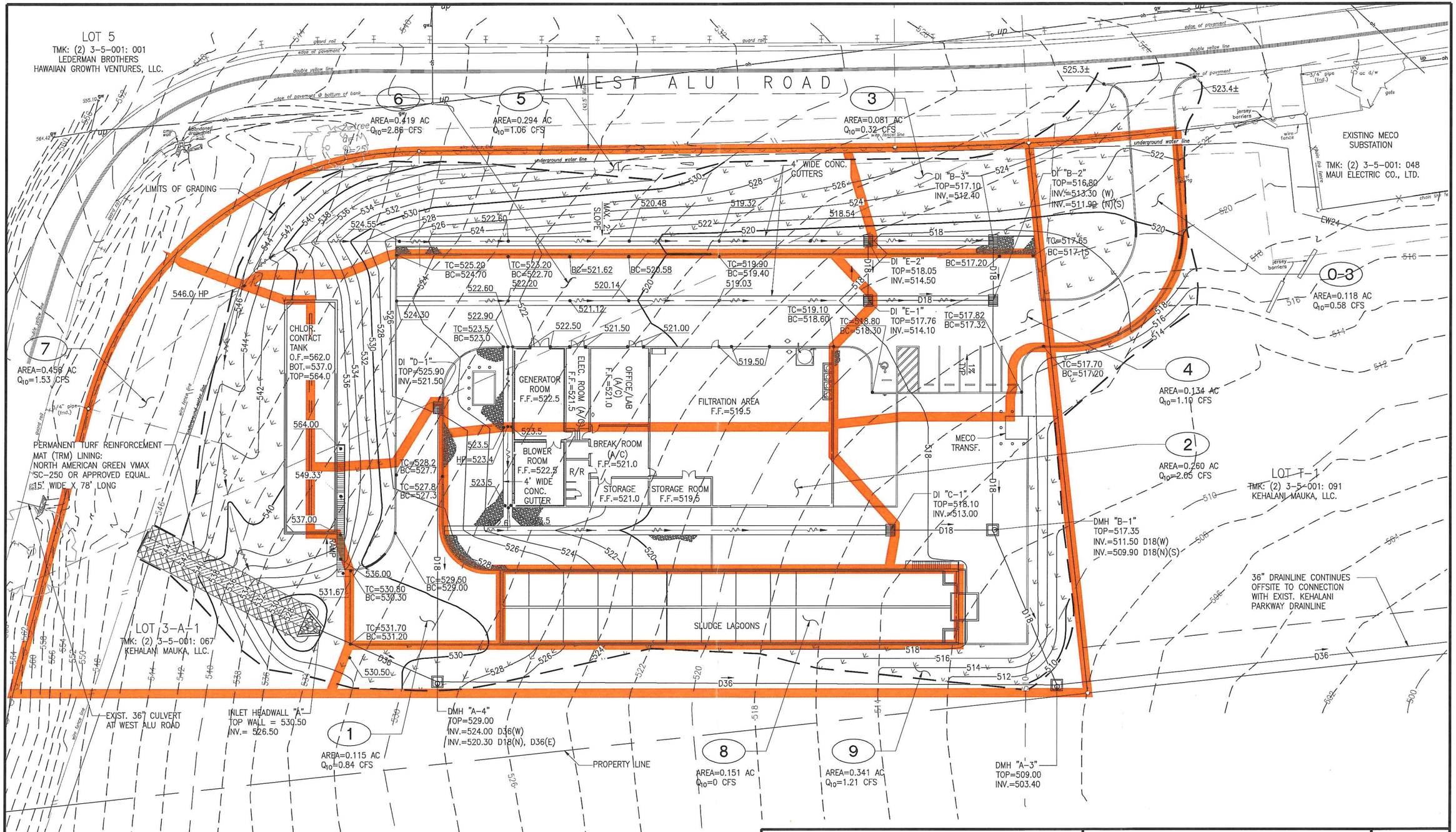
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

DRAINAGE AREA MAP-EXISTING CONDITIONS

EXHIBIT
2

JOB NO. 13-002

NOVEMBER 2014



DRAINAGE AREA MAP–PROPOSED CONDITIONS

SCALE: 1" = 40'

LINE IS 1 INCH AT FULL SIZE
(if NOT 1-inch : Scale Accordingly)

DRAINAGE REPORT
IAO SURFACE WATER TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

DRAINAGE AREA MAP–PROPOSED CONDITIONS

EXHIBIT 3

JOB NO. 13-002

NOVEMBER 2014

NORTH

Stream

VALLEY

IAO

IKAMA

Wailuku Elem Sch

Park

WT

Well

DITCH

DRAINAGE AREA O-2
AREA = 2.3 AC.
Q10 = 4.98 CFS

DRAINAGE AREA O-1
AREA = 16.6 AC.
Q10 = 27.80 CFS

PROJECT SITE

EXISTING 36" CULVERT
Q10 = 27.80 CFS

WEST ALU ROAD

EXISTING CULVERT

WAIHEE IRRIGATION DITCH

WAIKAPU IRRIGATION DITCH

1400

1200

1000

800

600

400

MAP SCALE 1" = 400'

0 1

LINE IS 1 INCH AT FULL SIZE
(if NOT 1-inch : Scale Accordingly)

DRAINAGE REPORT

IAO SURFACE WATER TREATMENT PLANT UPGRADES

WAILUKU, MAUI, HAWAI'I

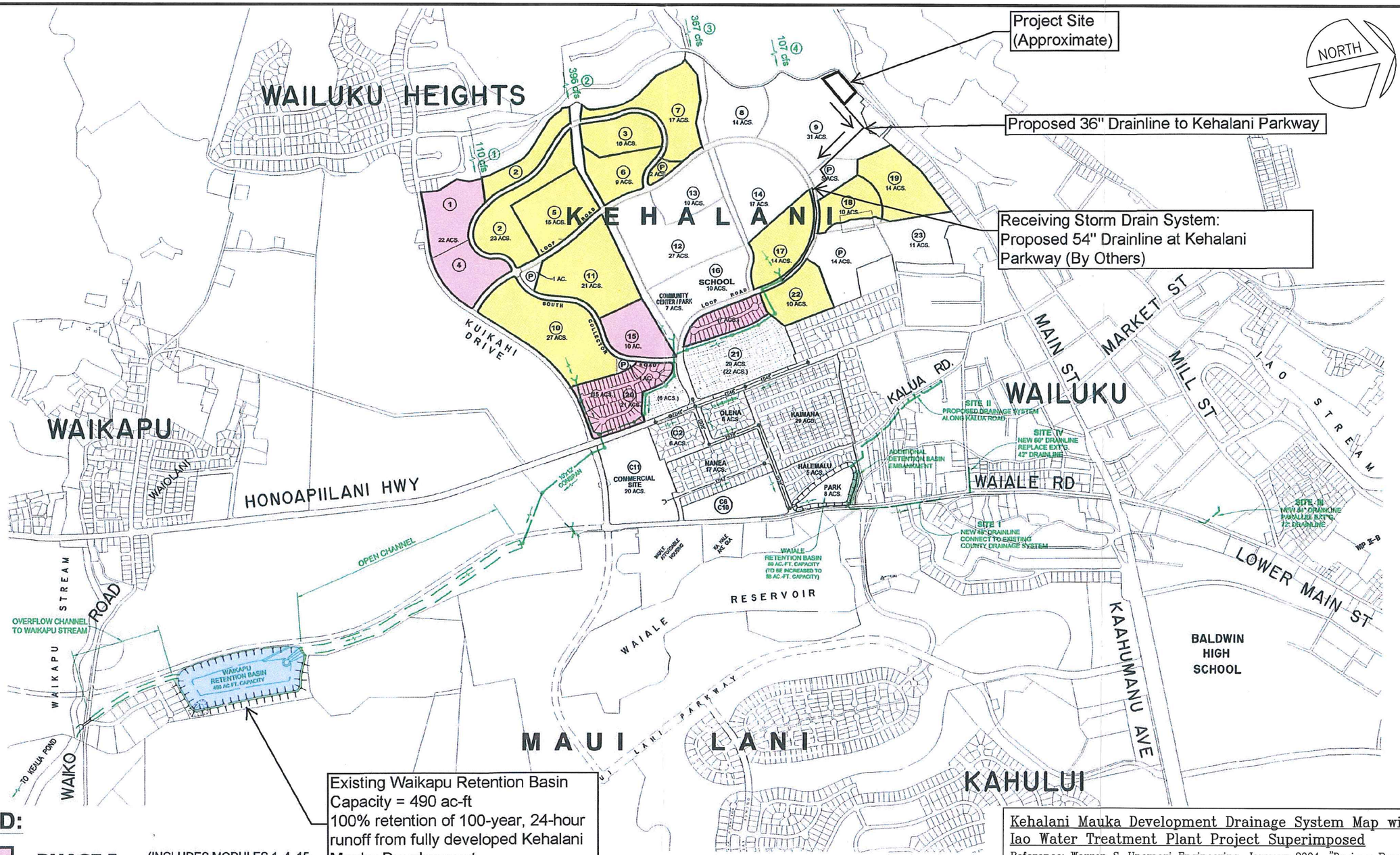
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, WAILUKU, HILO, HAWAII

DRAINAGE AREA MAP– OFFSITE

EXHIBIT 4

JOB NO. 13-002

NOVEMBER 2014



LEGEND:

- **PHASE I** (INCLUDES MODULES 1, 4, 15, AND PORTIONS OF 20 AND 21)
- **PHASE II** (INCLUDES MODULES 2, 3, 5, 6, 7, 10, 11, 22 AND PORTION OF 18 AND 19 ABOVE ELEV. 410±)
- **PHASE III** (REMAINDER)
- (20) DEVELOPMENT MODULE IDENTIFICATION NUMBER

MAP SCALE: 1" = 1250'

0 1

LINE IS 1 INCH AT FULL SIZE
(If NOT 1-inch : Scale Accordingly)

Kehalani Mauka Development Drainage System Map with Iao Water Treatment Plant Project Superimposed

Reference: Warren S. Unemori Engineering. January 2004. "Drainge Report, Kehalani Offsite Drainage System–Phase 1, Wailuku, Maui, Hawaii".

DRAINAGE REPORT
IAO SURFACE WATER TREATMENT PLANT UPGRADES
WAILUKU, MAUI, HAWAI'I

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
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KEHALANI MAUKA DEVELOPMENT DRAINAGE SYSTEM PLAN

EXHIBIT 5

JOB NO. 13-002

NOVEMBER 2014

APPENDIX A

Hydrology Calculations

APPENDIX A

DRAINAGE AREA CALULATIONS
EXISTING CONDITIONS

Drainage Area Label	Drainage Area Description	Area (acres)	Runoff Coeff.	Tc (min)	10-Yr Design Intensity (in/hr)	10-Yr, 1-Hr Runoff	
						Flow (cfs)	Volume (cf)
1	Onsite Area	2.251	0.35	16.5	5.27	**4.15**	**7,470**
O-1	Offsite to Ex. 36" Culv. & Site	16.6	0.41	27.7	4.07	**27.80**	**50,040**
O-2	Offsite to Site from W. Alu Rd	2.3	0.46	22.2	4.66	**4.98**	**8,964**
O-3	Offsite Area at Prop. Entrance	0.118	0.45	9.0	6.94	**0.37**	**666**
Total to Waihee Ditch		**21.269**				**37.30**	**67,140**

Notes:
1. All drainage areas are less than 100 acres. The Rational Method (Q= CIA) is used to determine runoff.
2. 10-year design is used for most drainage areas. 50-year design is used for runoff to proposed DI B-2 and B-3 which are located in a sump low point.
3. Refer to Runoff Coefficient Calculations for determination of "C" value.
4. Refer to Time of Concentration Calculations for determination of "Tc" value.
5. Rainfall Intensity obtained from the NOAA Precipitation Frequency Data Server, accessed online at: http://hdsc.nws.noaa.gov/hdsc/pfds
6. Runoff volume determined using triangular Rational Method hydrograph ending at 1-hour. Hydrograph Volume = (Q ft^3/sec) x (60 sec/min) x (60 min/hr) x (1/2)

APPENDIX A

DRAINAGE AREA CALCULATIONS
PROPOSED CONDITIONS

Drainage Area Label	Flows To	Area (acres)	Runoff Coeff.	Tc (min)	10-Yr Design Intensity (in/hr)	10-Yr, 1-Hr Runoff		50-Yr Design Intensity (in/hr)	50-Yr, 1-Hr Runoff	
						Flow (cfs)	Volume (cf)		Flow (cfs)	Volume (ac-ft)
1	DI D-1	0.115	0.84	5.0	8.75	**0.84**	**1,512**	-	-	-
2	DI C-1	0.260	0.90	5.0	8.75	**2.05**	**3,690**	-	-	-
3	DI B-3	0.081	0.48	5.7	8.43	**0.32**	**576**	12.05	0.46	828
4	DI B-2	0.134	0.93	5.0	8.75	**1.10**	**1,980**	12.50	1.57	2,826
5	DI E-2	0.294	0.46	7.0	7.85	**1.06**	**1,908**	-	-	-
6	DI E-1	0.419	0.87	6.9	7.89	**2.86**	**5,148**	-	-	-
7	Headwall A	0.456	0.43	7.2	7.76	**1.53**	**2,754**	-	-	-
8	Lagoon	0.151	0.00	5.0	8.75	**0.00**	**0**	← See Note 7 Below		
9	Waihee	0.341	0.59	12.2	6.02	**1.21**	**2,178**	-	-	-
O-1	Headwall A	16.6	0.41	27.7	4.07	**27.80**	**50,040**	-	-	-
O-2	DI E-2	2.3	0.46	22.2	4.66	**4.98**	**8,964**	-	-	-
O-3	DI B-2	0.118	0.66	7.9	7.44	**0.58**	**1,044**	10.62	0.82	1,476
Total to Waihee Ditch		**0.341**				**1.21**	**2,178**	**(36 cfs Decrease)**		
Total to Prop. Storm Drain Sys.		**20.928**				**43.12**	**77,616**	**(43 cfs Increase. See Note 8)**		

Notes:
1. All drainage areas are less than 100 acres. The Rational Method (Q= CIA) is used to determine runoff.
2. 10-year design is used for most drainage areas. 50-year design is used for DI B-2 and B-3 due to their location in a sump low point.
3. Refer to Runoff Coefficient Calculations for determination of "C" value.
4. Refer to Time of Concentration Calculations for determination of "Tc" value.
5. Rainfall Intensity obtained from the NOAA Precipitation Frequency Data Server, accessed online at: http://hdsc.nws.noaa.gov/hdsc/pfds
6. Runoff volume determined using triangular Rational Method hydrograph ending at 1-hour. Hydrograph Volume = (Q ft^3/sec) x (60 sec/min) x (60 min/hr) x (1/2)
7. Lagoon has open top and captures all rainfall that falls directly on it.
8. The prop. storm drain system runoff will be fully retained in the existing offsite Waikapu Retention Basin such that there will be zero discharge to any downstream drainage system.

APPENDIX A

RUNOFF COEFFICIENT CALCULATIONS

Drainage Area Label	C_{10} = 0.35 Ex. Tall Grass/ Brush		C_{10} = 0.40 Ex. Woods Brush		C_{10} = 0.40 Grass Cover (Graded Area)		C_{10} = 0.85 Dirt/ Bare Soil		C_{10} = 0.95 Impervious Surfaces		Weighted Avg. Coeff. TOTAL	
	Area (sf)	Area (%)	Area (sf)	Area (%)	Area (sf)	Area (%)	Area (sf)	Area (%)	Area (sf)	Area (%)	Area (sf)	Runoff Coeff.
Existing Conditions												
1	98,069	100.0	0	0.0	0	0.0	0	0.0	0	0.0	98,069	**0.35**
O-1	0	0.0	707,587	97.9	0	0.0	0	0.0	15,072	2.1	722,659	**0.41**
O-2	0	0.0	86,821	88.3	0	0.0	0	0.0	11,520	11.7	98,341	**0.46**
O-3	4,105	79.7	0	0.0	0	0.0	1,044	20.3	0	0.0	5,149	**0.45**
Proposed Conditions												
1	0	0.0	0	0.0	1,040	20.7	0	0.0	3,993	79.3	5,033	**0.84**
2	0	0.0	0	0.0	0	0.0	5,662	50.0	5,670	50.0	11,332	**0.90**
3	0	0.0	0	0.0	2,996	84.8	308	8.7	230	6.5	3,534	**0.48**
4	0	0.0	0	0.0	40	0.7	686	11.8	5,098	87.5	5,824	**0.93**
5	0	0.0	0	0.0	11,240	87.8	723	5.7	832	6.5	12,795	**0.46**
6	0	0.0	0	0.0	2,599	14.2	1,048	5.7	14,608	80.0	18,255	**0.87**
7	0	0.0	0	0.0	18,652	94.0	0	0.0	1,189	6.0	19,841	**0.43**
8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6,600	**0.00**
9	0	0.0	0	0.0	8,674	58.4	5,734	38.6	444	3.0	14,852	**0.59**
O-1	(No Change, See Existing Conditions)											
O-2	(No Change, See Existing Conditions)											
O-3	0	0.0	0	0.0	2,748	53.4	0	0.0	2,400	46.6	5,148	**0.66**

Surface Type Detailed Descriptions:

Ex. Tall Grass/ Brush, Good Cover, Steep Slopes, HSG C	C = 0.35
Ex. Woods, Good Cover, V. Steep Slopes, HSG C	C = 0.40
Grass Cover (Graded Area), V. Slopes, HSG C	C = 0.40
Dirt Roadways or Bare Soil HSG C	C = 0.85
Impervious Surfaces (Pavement, Buildings, Pads, etc)	C = 0.95

Note: 1. Lagoon has open top and captures all rainfall that falls directly on it.

APPENDIX A

TIME OF CONCENTRATION CALCULATIONS

Drain Area Label	Flow Segment 1 Overland Flow				Flow Segment 2 Overland Flow				Flow Segment 3 Concentrated Flow				Flow Segment 4 Concentrated Flow				TOTAL
	Surf. Type	Length (ft)	Slope (%)	Time (min)	Surf. Type	Length (ft)	Slope (%)	Time (min)	Surf. Type	Length (ft)	Slope (%)	Time (min)	Surf. Type	Length (ft)	Slope (%)	Time (min)	Time (min)
Existing Conditions																	
1	Grass	440	9.3	16.5	-	-	-	0	-	-	-	0	-	-	-	0	16.5
O-1	Woods	1,730	39.3	27.0	-	-	-	0	Paved	590	8.5	0.7	-	-	-	0	27.7
O-2	Woods	830	34.9	21.7	-	-	-	0	Paved	350	7.1	0.5	-	-	-	0	22.2
O-3	Grass	90	9.4	9.0	-	-	-	0	-	-	-	0	-	-	-	0	9.0
Proposed Conditions																	
1	Grass	25	30.1	3.0	Pave	45	5.6	0.5	-	-	-	0	-	-	-	0	*3.5**
2	Gravel	25	11.6	1.0	-	-	-	0	Pave	200	3.0	0.7	-	-	-	0	*1.7**
3	Grass	40	23.6	5.5	-	-	-	0	Pave	65	3.9	0.2	-	-	-	0	5.7
4	Gravel	25	2.0	1.8	Pave	30	2.8	0.6	Pave	45	2.0	0.2	-	-	-	0	*2.6**
5	Grass	35	12.3	6.0	-	-	-	0	Grass	75	28.5	0.3	Pave	195	3.5	0.7	7.0
6	Grass	65	31.4	6.2	-	-	-	0	Pave	195	3.3	0.7	-	-	-	0	6.9
7	Grass	70	20.4	7.0	-	-	-	0	Grass	65	19.3	0.2	-	-	-	0	7.2
8	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-	0	*0.0**
9	Grass	175	7.4	12.2	-	-	-	0	-	-	-	0	-	-	-	0	12.2
O-1	(No Change, See Existing Conditions)																
O-2	(No Change, See Existing Conditions)																
O-3	Grass	70	10.4	7.8	-	-	-	0	Pave	20	2.0	0.1	-	-	-	0	7.9

Notes:
1. County of Maui Storm Drain Manual Plate 1 used for the determination of overland flow time.
2. County of Maui Storm Drain Manual Table 4 used for the determination of concentrated flow time.
3. A pipe flow rate of 5 fps was assumed.
4. Time of concentrations marked with asterisk (*) are rounded up to 5 minutes minimum for runoff calculations.

APPENDIX A

SUMMARY OF PROCESS DISCHARGES

Process Flow	Description	Approx. Frequency	Estimated Flow Rate	Flow Rate (cfs)	Flows To
1	Backwash from the strainers	Hourly	150 gpm	0.33 cfs	Waihee Ditch
2	Bypass flow of raw water supply (if raw water is too dirty)	Monthly	4.8 MGD	7.43 cfs	Waihee Ditch
3	Washout water from the Chlorine Contact Tank (CCT)	Rare	300 gpm	0.67 cfs	DI D-1
4	Overflow from the CCT	Rare	4.8 MGD	7.43 cfs	DI D-1

Notes:
1. Process Flows 1 and 2 first go to the sludge lagoons. The decant from the sludge lagoons then goes to the existing storm drain system at the existing Iao Water Treatment Plant, which discharges to the Waihee Irrigation Ditch.
2. Process Flows 3 and 4 are rare and it would be extremely unlikely that they would occur at the same time as the 10-year storm. For this reason, Process Flows 3 and 4 are not added to the 10-year storm flows in the storm drain HGL analysis.

NOAA Atlas 14, Volume 4, Version 3
Location name: Wailuku, Hawaii, US*
Coordinates: 20.8835, -156.5125
Elevation: 493 ft*
* source: Google Maps

Precipitation data is specific to project location.

POINT PRECIPITATION FREQUENCY ESTIMATES

S. Perica, D. Martin, B. Lin, T. Parzybok, D. Riley, M. Yekta, L. Hiner, L.-C. Chen, D. Brewer, F. Yan, K. Maitaria, C. Trypaluk, G. M. Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PRECIPITATION DATA (in inches per hour)

PF_tabular | PF_graphical | Maps_&_aerials

Interpolate to find 10-year Rainfall Intensity for the storm duration equal to the Tc.

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.10** (3.44-4.66)	**5.41** (4.60-6.36)	**7.25** (6.10-8.60)	**8.75** (7.25-10.4)	**10.8** (8.77-13.0)	**12.5** (9.98-15.2)	**14.2** (11.1-17.6)	**16.1** (12.3-20.2)	**18.7** (13.7-24.0)	**20.9** (14.8-27.2)
10-min	**3.04** (2.56-3.45)	**4.01** (3.41-4.72)	**5.38** (4.52-6.38)	**6.49** (5.37-7.74)	**8.02** (6.50-9.66)	**9.25** (7.40-11.3)	**10.6** (8.26-13.0)	**11.9** (9.11-15.0)	**13.9** (10.2-17.8)	**15.5** (11.0-20.2)
15-min	**2.55** (2.14-2.89)	**3.36** (2.85-3.95)	**4.50** (3.79-5.34)	**5.43** (4.50-6.48)	**6.71** (5.45-8.09)	**7.74** (6.20-9.44)	**8.84** (6.91-10.9)	**9.99** (7.62-12.5)	**11.6** (8.52-14.9)	**13.0** (9.19-16.9)
30-min	**1.79** (1.50-2.03)	**2.36** (2.01-2.78)	**3.17** (2.66-3.76)	**3.82** (3.16-4.56)	**4.72** (3.83-5.69)	**5.45** (4.36-6.64)	**6.22** (4.86-7.67)	**7.03** (5.37-8.81)	**8.18** (6.00-10.5)	**9.12** (6.46-11.9)
60-min	**1.18** (0.990-1.34)	**1.55** (1.32-1.83)	**2.08** (1.75-2.47)	**2.51** (2.08-3.00)	**3.11** (2.52-3.74)	**3.58** (2.87-4.37)	**4.09** (3.20-5.05)	**4.62** (3.53-5.80)	**5.38** (3.95-6.89)	**6.00** (4.25-7.82)
2-hr	**0.804** (0.696-0.934)	**1.08** (0.920-1.27)	**1.44** (1.22-1.72)	**1.73** (1.44-2.07)	**2.13** (1.74-2.58)	**2.45** (1.96-3.00)	**2.77** (2.17-3.43)	**3.11** (2.38-3.91)	**3.58** (2.63-4.60)	**3.97** (2.81-5.19)
3-hr	**0.603** (0.522-0.699)	**0.816** (0.696-0.959)	**1.09** (0.920-1.30)	**1.31** (1.09-1.57)	**1.62** (1.32-1.95)	**1.86** (1.49-2.27)	**2.10** (1.65-2.60)	**2.36** (1.81-2.96)	**2.72** (2.00-3.48)	**3.01** (2.13-3.93)
6-hr	**0.383** (0.328-0.447)	**0.514** (0.438-0.606)	**0.696** (0.585-0.827)	**0.840** (0.698-1.01)	**1.04** (0.847-1.26)	**1.19** (0.958-1.46)	**1.36** (1.06-1.68)	**1.52** (1.17-1.92)	**1.76** (1.29-2.26)	**1.94** (1.38-2.55)
12-hr	**0.237** (0.204-0.276)	**0.320** (0.272-0.376)	**0.437** (0.367-0.518)	**0.531** (0.441-0.634)	**0.664** (0.541-0.801)	**0.771** (0.617-0.941)	**0.883** (0.692-1.09)	**1.00** (0.765-1.26)	**1.17** (0.857-1.50)	**1.30** (0.924-1.70)
24-hr	**0.146** (0.125-0.171)	**0.200** (0.171-0.234)	**0.276** (0.236-0.324)	**0.339** (0.288-0.399)	**0.429** (0.360-0.507)	**0.503** (0.418-0.598)	**0.582** (0.478-0.696)	**0.668** (0.541-0.804)	**0.792** (0.626-0.963)	**0.893** (0.692-1.10)
2-day	**0.092** (0.081-0.105)	**0.125** (0.110-0.143)	**0.172** (0.151-0.197)	**0.211** (0.183-0.243)	**0.266** (0.229-0.308)	**0.311** (0.265-0.362)	**0.359** (0.301-0.421)	**0.411** (0.339-0.485)	**0.485** (0.390-0.580)	**0.545** (0.429-0.660)
3-day	**0.066** (0.058-0.075)	**0.090** (0.079-0.102)	**0.124** (0.109-0.141)	**0.152** (0.133-0.174)	**0.193** (0.167-0.222)	**0.227** (0.194-0.263)	**0.263** (0.222-0.307)	**0.303** (0.252-0.356)	**0.360** (0.292-0.428)	**0.408** (0.323-0.490)
4-day	**0.053** (0.047-0.060)	**0.072** (0.064-0.082)	**0.100** (0.088-0.113)	**0.123** (0.108-0.140)	**0.157** (0.136-0.179)	**0.185** (0.159-0.213)	**0.215** (0.183-0.250)	**0.249** (0.208-0.291)	**0.298** (0.242-0.353)	**0.339** (0.269-0.406)
7-day	**0.034** (0.030-0.038)	**0.046** (0.041-0.052)	**0.064** (0.056-0.072)	**0.078** (0.069-0.089)	**0.100** (0.087-0.115)	**0.118** (0.102-0.136)	**0.138** (0.117-0.160)	**0.160** (0.133-0.187)	**0.192** (0.156-0.227)	**0.219** (0.174-0.262)
10-day	**0.026** (0.023-0.030)	**0.035** (0.031-0.040)	**0.049** (0.043-0.055)	**0.060** (0.052-0.068)	**0.076** (0.066-0.087)	**0.089** (0.077-0.103)	**0.104** (0.088-0.120)	**0.120** (0.100-0.140)	**0.144** (0.117-0.170)	**0.163** (0.130-0.195)
20-day	**0.016** (0.015-0.019)	**0.022** (0.019-0.025)	**0.030** (0.026-0.034)	**0.036** (0.032-0.041)	**0.045** (0.039-0.052)	**0.053** (0.045-0.061)	**0.061** (0.051-0.070)	**0.069** (0.058-0.081)	**0.082** (0.067-0.097)	**0.092** (0.073-0.110)
30-day	**0.013** (0.011-0.015)	**0.017** (0.015-0.019)	**0.023** (0.020-0.026)	**0.028** (0.025-0.032)	**0.035** (0.030-0.040)	**0.040** (0.035-0.046)	**0.046** (0.039-0.053)	**0.052** (0.044-0.061)	**0.061** (0.050-0.072)	**0.068** (0.054-0.082)
45-day	**0.010** (0.009-0.012)	**0.014** (0.012-0.016)	**0.018** (0.016-0.021)	**0.022** (0.020-0.025)	**0.027** (0.024-0.031)	**0.031** (0.027-0.036)	**0.035** (0.030-0.041)	**0.040** (0.033-0.046)	**0.046** (0.037-0.054)	**0.050** (0.040-0.060)
60-day	**0.009** (0.008-0.010)	**0.012** (0.011-0.014)	**0.016** (0.014-0.018)	**0.019** (0.017-0.021)	**0.023** (0.020-0.026)	**0.026** (0.022-0.030)	**0.029** (0.025-0.034)	**0.032** (0.027-0.038)	**0.037** (0.030-0.043)	**0.040** (0.032-0.048)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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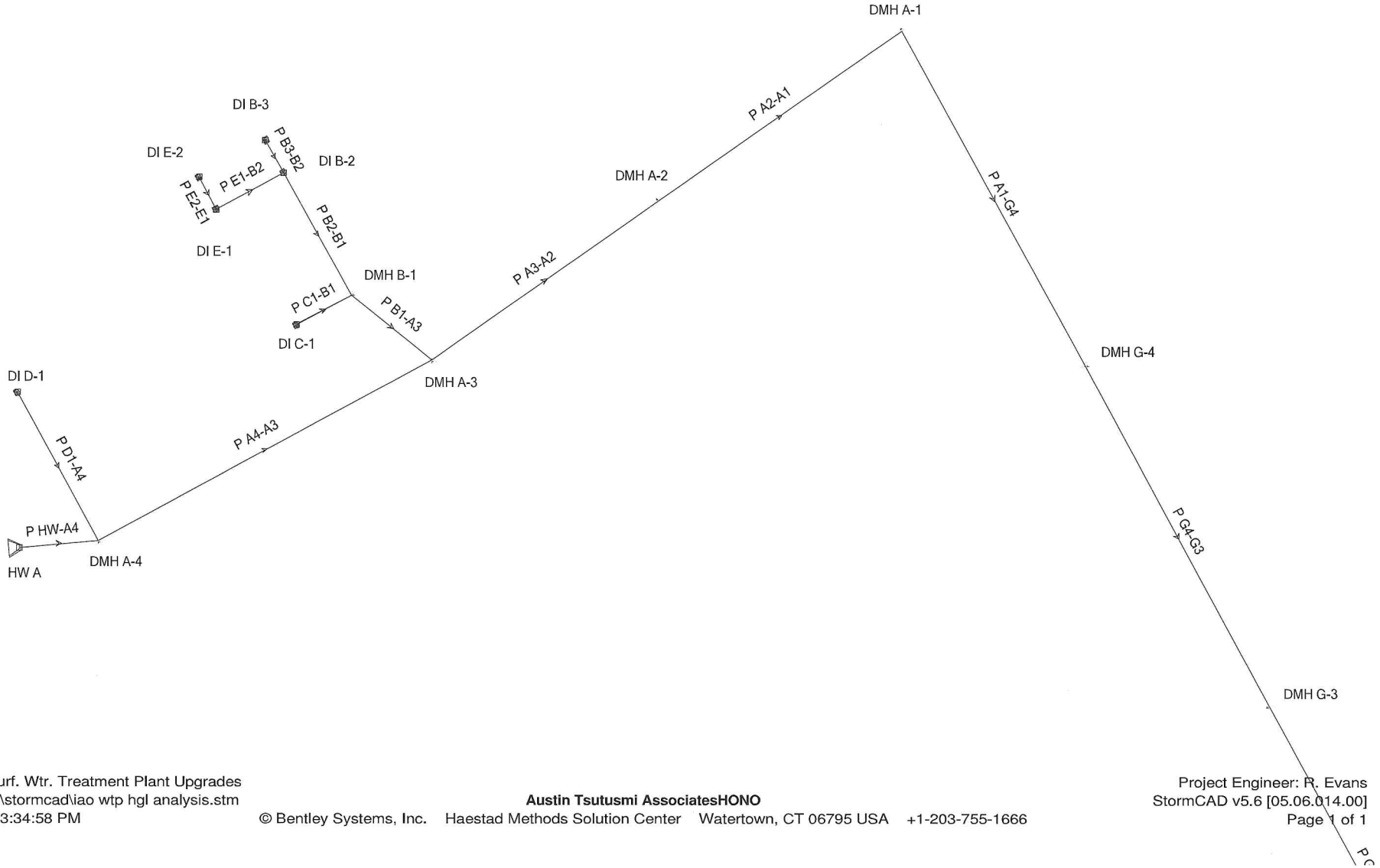
PF graphical

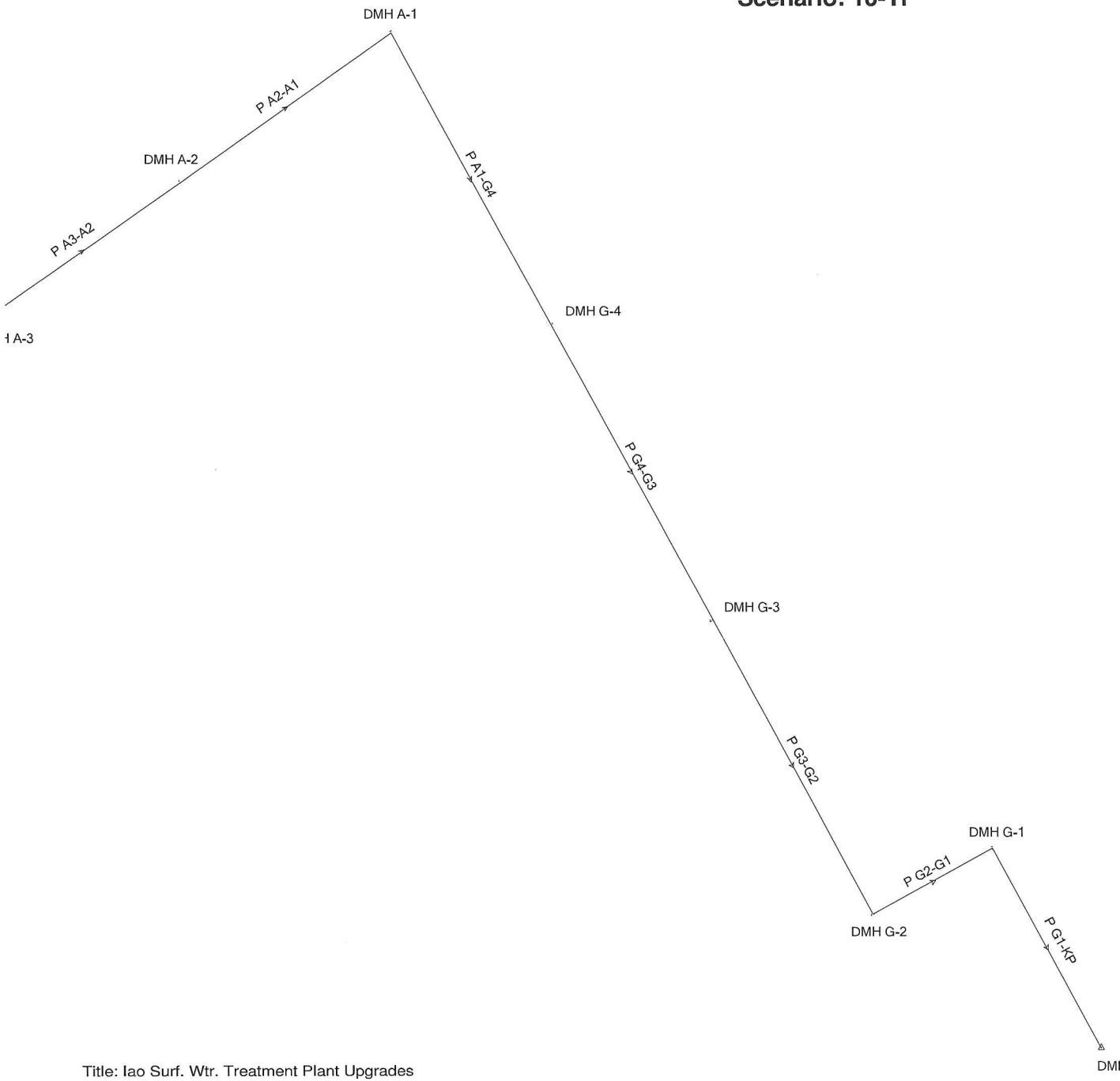
APPENDIX B

Hydraulic Calculations

Scenario: 10-Yr



Scenario: 10-Yr



Scenario: 10-Yr

HGL Report- Iao WTP

Line	Label	Number of Sections	Section Size	Material Description	Mannings n	Downstream Invert Elevation (ft)	Upstream Invert Elevation (ft)	Length (ft)	Pipe Slope (ft/ft)	Hydraulic Slope (ft/ft)	Total System Flow (cfs)	Full Flow Capacity (cfs)	Avg. Velocity (ft/s)	Normal Depth / Diameter (d/D) (%)	Hydraulic Grade Line Out (ft)	Element Headloss (ft)	Hydraulic Grade Line In (ft)	Ground Elevation (ft)
1	DMH KP										43.12				460.00	0.00	460.00	472.00
2	P G1-KP	1	36 inch	Corrugated HDPE (Smooth	0.012	463.50	465.35	185.00	0.0100	0.0125	43.12	72.25	10.67	55.6	465.18	2.31	467.49	
3	DMH G-1										43.12				467.49	1.49	468.98	473.00
4	P G2-G1	1	36 inch	Corrugated HDPE (Smooth	0.012	465.35	469.50	111.00	0.0374	0.0240	43.12	139.71	17.41	38.1	468.98	2.66	471.64	
5	DMH G-2										43.12				471.64	1.49	473.13	483.00
6	P G3-G2	1	36 inch	Corrugated HDPE (Smooth	0.012	469.50	472.25	275.00	0.0100	0.0046	43.12	72.25	10.67	55.6	473.13	1.26	474.39	
7	DMH G-3										43.12				474.39	0.50	474.89	484.00
8	P G4-G3	1	36 inch	Corrugated HDPE (Smooth	0.012	472.25	475.00	275.00	0.0100	0.0082	43.12	72.25	10.67	55.6	474.89	2.25	477.14	
9	DMH G-4										43.12				477.14	0.50	477.64	480.00
10	P A1-G4	1	36 inch	Corrugated HDPE (Smooth	0.012	475.00	481.50	272.00	0.0239	0.0221	43.12	111.69	14.78	43.1	477.64	6.00	483.64	
11	DMH A-1										43.12				483.64	1.49	485.13	494.75
12	P A2-A1	1	36 inch	Corrugated HDPE (Smooth	0.012	485.60	492.00	212.00	0.0302	0.0345	43.12	125.54	16.11	40.4	486.82	7.32	494.14	
13	DMH A-2										43.12				494.14	0.50	494.64	499.00
14	P A3-A2	1	36 inch	Corrugated HDPE (Smooth	0.012	492.00	503.40	197.00	0.0579	0.0553	43.12	173.81	20.40	33.9	494.64	10.90	505.54	
15	DMH A-3										43.12				505.54	0.70	506.23	509.00
16	P A4-A3	1	36 inch	Corrugated HDPE (Smooth	0.012	503.40	520.30	270.00	0.0626	0.0587	30.17	180.77	18.97	27.6	506.23	15.85	522.08	
17	DMH A-4										30.17				522.08	1.11	523.19	529.00
18	P HW-A4	1	36 inch	Corrugated HDPE (Smooth	0.012	524.00	526.50	56.00	0.0446	0.0578	29.33	152.66	16.67	29.7	525.02	3.24	528.25	
19	HW A										29.33				528.25	0.00	528.25	530.50
20	P B1-A3	1	18 inch	Corrugated HDPE (Smooth	0.012	503.40	509.90	73.00	0.0890	0.0687	12.95	33.95	17.92	42.8	506.23	5.01	511.25	
21	DMH B-1										12.95				511.25	0.65	511.90	517.35
22	P B2-B1	1	18 inch	Corrugated HDPE (Smooth	0.012	509.90	511.90	100.00	0.0200	0.0127	10.90	16.09	9.78	60.3	511.90	1.27	513.17	
23	DI B-2										10.90				513.17	1.09	514.26	516.80
24	P B3-B2	1	18 inch	Corrugated HDPE (Smooth	0.012	511.90	512.40	26.00	0.0192	0.0000	0.32	15.78	0.18	9.9	514.26	0.00	514.26	
25	DI B-3										0.32				514.26	0.00	514.26	517.10
26	P E1-B2	1	18 inch	Corrugated HDPE (Smooth	0.012	513.30	514.10	55.00	0.0145	0.0191	8.90	13.72	8.26	58.6	514.20	1.05	515.25	
27	DI E-1										8.90				515.25	0.87	516.12	517.76
28	P E2-E1	1	18 inch	Corrugated HDPE (Smooth	0.012	514.10	514.50	26.00	0.0154	0.0028	6.04	14.11	3.42	45.7	516.12	0.07	516.19	
29	DI E-2										6.04				516.19	0.00	516.19	518.05
30	P C1-B1	1	18 inch	Corrugated HDPE (Smooth	0.012	511.50	513.00	45.00	0.0333	0.0383	2.05	20.78	7.49	21.2	511.82	1.72	513.54	
31	DI C-1										2.05				513.54	0.00	513.54	518.10
32	P D1-A4	1	18 inch	Corrugated HDPE (Smooth	0.012	520.30	521.50	119.00	0.0101	0.0001	0.84	11.43	0.48	18.3	523.19	0.01	523.20	
33	DI D-1										0.84				523.20	0.00	523.20	525.90

Culvert Calculator Report
Existing 36" W. Alu Rd. Culvert

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	562.00	ft	Headwater Depth/Height	0.92	
Computed Headwater Elev	560.36	ft	Discharge	27.80	cfs
Inlet Control HW Elev.	560.12	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	560.36	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	557.61	ft	Downstream Invert	556.67	ft
Length	35.00	ft	Constructed Slope	0.026857	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.19	ft
Slope Type	Steep		Normal Depth	1.03	ft
Flow Regime	Supercritical		Critical Depth	1.71	ft
Velocity Downstream	10.62	ft/s	Critical Slope	0.004558	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	560.36	ft	Upstream Velocity Head	0.70	ft
Ke	0.50		Entrance Loss	0.35	ft

Inlet Control Properties					
Inlet Control HW Elev.	560.12	ft	Flow Control	Unsubmerged	
Inlet Type	Square edge w/headwall		Area Full	7.1	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Proposed 36" Onsite Headwall

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	529.50	ft	Headwater Depth/Height	0.95	
Computed Headwater Elev	529.34	ft	Discharge	29.33	cfs
Inlet Control HW Elev.	529.09	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	529.34	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	526.50	ft	Downstream Invert	524.25	ft
Length	60.00	ft	Constructed Slope	0.037500	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.07	ft
Slope Type	Steep		Normal Depth	0.97	ft
Flow Regime	Supercritical		Critical Depth	1.75	ft
Velocity Downstream	12.94	ft/s	Critical Slope	0.004642	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	529.34	ft	Upstream Velocity Head	0.73	ft
Ke	0.50		Entrance Loss	0.36	ft

Inlet Control Properties					
Inlet Control HW Elev.	529.09	ft	Flow Control	Unsubmerged	
Inlet Type	Square edge w/headwall		Area Full	7.1	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

FlowMaster Report: DI B-2 Check of Ponding Depth

Project Description

Solve For	Spread

Input Data

Discharge		1.20	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		0.05	ft/ft
Road Cross Slope		0.02	ft/ft
Grate Width		2.00	ft
Grate Length		3.30	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		0.00	%

Results

Spread	7.79	ft
Depth	0.22	ft
Gutter Depression	0.06	ft
Total Depression	0.06	ft
Open Grate Area	5.94	ft²
Active Grate Weir Length	7.30	ft

Messages

Notes

Only half of grate can be modeled due to limitations with how FlowMaster is able to model an inlet grate with a side slope. Therefore, use half of flow.

Q50 = 2.39 cfs
Half Q50 = 1.20 cfs

Find Ponding Depth = 0.22 ft or 2.6 in (OK)

FlowMaster Report: DI B-3 Check of Ponding Depth

Project Description

Solve For	Spread

Input Data

Discharge		0.23	ft³/s
Gutter Width		2.00	ft
Gutter Cross Slope		0.05	ft/ft
Road Cross Slope		0.02	ft/ft
Grate Width		2.00	ft
Grate Length		3.30	ft
Local Depression		0.00	in
Local Depression Width		0.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		0.00	%

Results

Spread	2.85	ft
Depth	0.12	ft
Gutter Depression	0.06	ft
Total Depression	0.06	ft
Open Grate Area	5.94	ft²
Active Grate Weir Length	7.30	ft

Messages

Notes

Only half of grate can be modeled due to limitations with how FlowMaster is able to model an inlet grate with a side slope. Therefore use half of flow.

Q50 = 0.46 cfs
Half Q50 = 0.23 cfs

Find Ponding Depth = 0.12 ft or 1.4 in (OK)

APPENDIX C

Water Quality Calculations

APPENDIX C

WATER QUALITY CALCULATIONS

A. Description:

The project is located within the Kehalani Mauka master planned area. As part of the Drainage Master Plan for Kehalani Mauka, a large offsite retention basin was constructed roughly 2 miles southeast of the project site, along Waiale Road. The basin, known as Waikapu Retention Basin, is designed to completely retain the 100-year, 24-hour runoff from the fully developed Kehalani Mauka development area.

Waikapu Retention Basin has a storage volume of 490 ac-ft without any low-flow outlet. Stormwater will be completely retained, thereby capturing all suspended solids and allowing them to settle out. The captured stormwater will then infiltrate into the soils and recharge groundwater. The practice of extended detention is recognized by the County of Maui as an acceptable Water Quality BMP.

Reference: Department of Public Works & Waste Management, County of Maui, *Rules for the Design of Storm Water Treatment Best Management Practices*, Title MC-15, Subtitle 01, Chapter 111.

B. Determine Water Quality Design Volume (WQDV):

WQDV = C x P x A x 3630

WQDV = Water Quality Design Volume (cf)
C = Runoff Coefficient
P = Design Storm for Water Quality
A = Drainage Area (acres)
3630 = Conversion Factor = (43,560 ft^2/ac) (1ft/12in)

Next Determine runoff coefficient, C:

C = 0.05 + (0.009 x IMP)
IMP = Percent Impervious Area Within Drainage Area
Impervious Area on Site = 1.061 ac
Total Site Area = 2.251 ac
IMP = (1.061 ac/ 2.251 ac) = 47.1%
C = 0.05 + (0.009 x 47.1)
C = 0.47

Next calculated required WQDV for site:

WQDV = (0.47) (1.00 in) (2.251 ac) (3630)
WQDV = 3,840 cf

Summary of Required Water Quality Volume:

Drainage Area	IMP (ac)	IMP %	C	P (in)	A (ac)	Factor	WQDV (cf)	**WQDV (ac-ft)**
Onsite	1.061	47.1	0.47	1.00	2.251	3630	3,840	**0.088**
Offsite	0.634	3.3	0.08	1.00	18.966	3630	5,508	**0.126**
							Total	**0.215**

Notes: Gravel/ Bare soil counted as impervious surface.

C. Design System:

1. Check Water Quality Volume at Basin

Total WQDV Required =	0.215	ac-ft
Total WQDV Provided at Waikapu Basin =	490.00	ac-ft

Adequate treatment volume is provided.
Since the existing Waikapu Retention Basin has capacity to retain the 100-year 24-hour storm runoff, it therefore has capacity to store the lesser 1-inch water quality storm.

Additional Information: The Dam Safety Division of the DLNR is requiring the owner to install submersible outflow pumps at the basin as a safety measure. As of November 2014, the plan for the pumps is being reviewed by DLNR and the pumps have not been installed yet. However, even after the future pumps are installed, the basin will still provide sufficient storage for the water quality volume.
The retention basin bottom invert is 270 ft. The first pump will not turn on until the water surface reaches an elevation of 280 ft. At elevation 280 ft the basin has a cumulative storage capacity of 89.488 acre-feet, which is still sufficient for 100% retention of the water quality storm runoff from the entire Kehalani Mauka Development and its contributing offsite areas.

FORM B

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT SERVICES ADMINISTRATION
250 SOUTH HIGH STREET
WAILUKU, HAWAII 96793
Ph: (808)270-7242 Fax: (808)270-7972 Inspector: (808)270-7366

STORMWATER RUNOFF CONTROL PRACTICES AND MAINTENANCE PLAN

INTRODUCTION

Increases in impervious surfaces associated with development can increase runoff, degrade water quality, and negatively impact streams, coastal waters, and other water bodies. The best way to mitigate these impacts is to treat, infiltrate, or store runoff onsite before it can impact water bodies downstream.

This General Permit allows the permit holder to construct the proposed project, subject to special conditions and requirements to mitigate stormwater impacts due to development.

OWNER/PERMITTEE INFORMATION

Project Name:	Iao Surface Water Treatment Plant Upgrades
Address:	No assigned address
Tax Map Key:	(2) 3-5-001: 067 (POR.), (2) 3-5-001: 091 (POR.)
Permit No.:	
Facility Contact Name:	County of Maui Department of Water Supply
Phone Number:	(808) 270-7730
E-Mail:	Water.Supply@co.maui.hi.us

REQUIRED BEST MANAGEMENT PRACTICES

To the maximum extent feasible, runoff from paved areas and other impervious surfaces, roof drains, and other onsite drainage systems shall not be allowed to directly drain into the street, gutter, storm drain, or drainage ditch, or any stream, creek, or other body of water. Rather runoff shall be directed to vegetated areas, gravel or sand pits, retention ponds, vegetated swale, tree wells, planter areas, porous pavements, or other treatment devices.

TREATMENT CONTROL MEASURES

- [x] Detention Basin
- [ ] Bioretention
- [ ] Pre-fabricated Treatment Device
- [ ] Infiltration Basin/Trench
- [ ] Vegetated Swale
- [ ] Porous Pavement
- [ ] Sand Filter
- [ ] Vegetated Filter Strip
- [ ] Subsurface Drainage System
- [ ] Other

Note: The Existing Waikapu Retention Basin adjacent to Waiale Road provides treatment and storage for a large portion of the Kehalani Development Master Plan area, which this project is a part of. The WQDV and the 100-year storm are completely retained in the basin.

- Attach appropriate checksheet.
- 8-1/2x11 exhibit showing location and size of the treatment control measure shall be provided.

MAINTENANCE REQUIREMENT

- Property owner shall provide adequate long term maintenance to ensure that all storm water control facilities remain in proper working condition.
- County representatives are authorized to enter the property at reasonable times and in a reasonable manner for the purpose of inspecting the facilities.
- Appropriate maintenance checklists are attached.

OWNER'S CERTIFICATION

- The site shall be developed and maintained in accordance with all provisions of this plan.
- Compliance with the provisions of this plan shall remain as a condition of the associated building permit or subdivision approval in perpetuity and shall run with the land unless otherwise released in writing by the County of Maui.

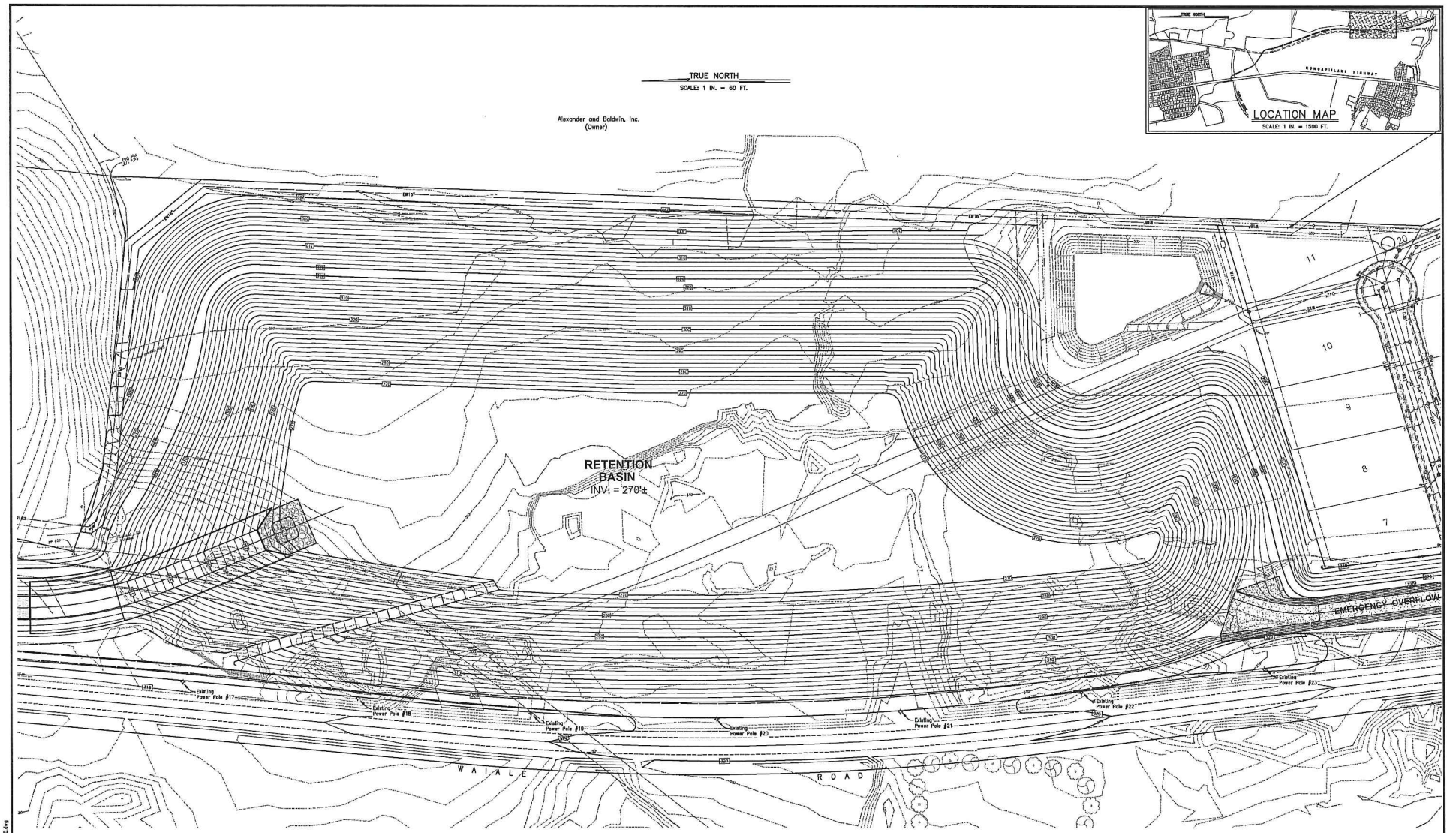
Name Signature Date

STORMWATER POST-DEVELOPMENT CONTROL MEASURE MAINTENANCE CHECK LIST FOR:

DETENTION BASIN

COUNTY OF MAUI

MAINTENANCE REQUIREMENTS	
Maintenance Activity	Schedule
Reconstruct or replace facility when it no longer functions properly.	As needed
Ensure that appropriate site runoff continues to flow to facility.	Annual
Assess overall operation of facility and make necessary repairs.	Annual
Inspect, clean, and repair all pretreatment areas.	Annual, After major storms
Maintain establishment of vegetation and replant bare areas.	Annual
Remove unwanted trees, brush, and weeds.	Annual
Repair inlet and outlet structures, overflow, low flow channels, and any other structures.	Annual, After major storms
Remove trash and debris.	Annual, After major storms
Repair erosion and other damage.	Annual, After major storms
Remove sediment from main basin	When 50% of original volume has been lost
Other:	



ALAN L. UNEMORI
LICENSED PROFESSIONAL ENGINEER
NO. 8354-C
HAWAII, U.S.A.
License Expires: April 30, 2018
SIGNATURE DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION "AS DEFINED IN SECTION 16-115-2 OF THE HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, LAND SURVEYORS AND LANDSCAPE ARCHITECTS"

LETTER	DESCRIPTION	DATE

WARREN S. UNEMORI ENGINEERING, INC.
CIVIL & STRUCTURAL ENGINEERS/LAND SURVEYORS
WELLS STREET PROFESSIONAL CENTER, SUITE 403
2145 WELLS STREET, WAILUKU, MAUI, HAWAII 96793

KEHALANI OFFSITE DRAINAGE SYSTEM

(PUMP STATION AT RETENTION BASIN)

WAILUKU, MAUI, HAWAII

TITLE RETENTION BASIN – SITE PLAN

DESIGNED BY: WSU	CHECKED BY: RMA	JOB NUMBER: 13041.10	SHEET: 3
DRAWN BY: WS	APPROVED BY: WSU	DATE: 2-9-07	OF SHEETS

SCALE: SCALE: 1" = 60'

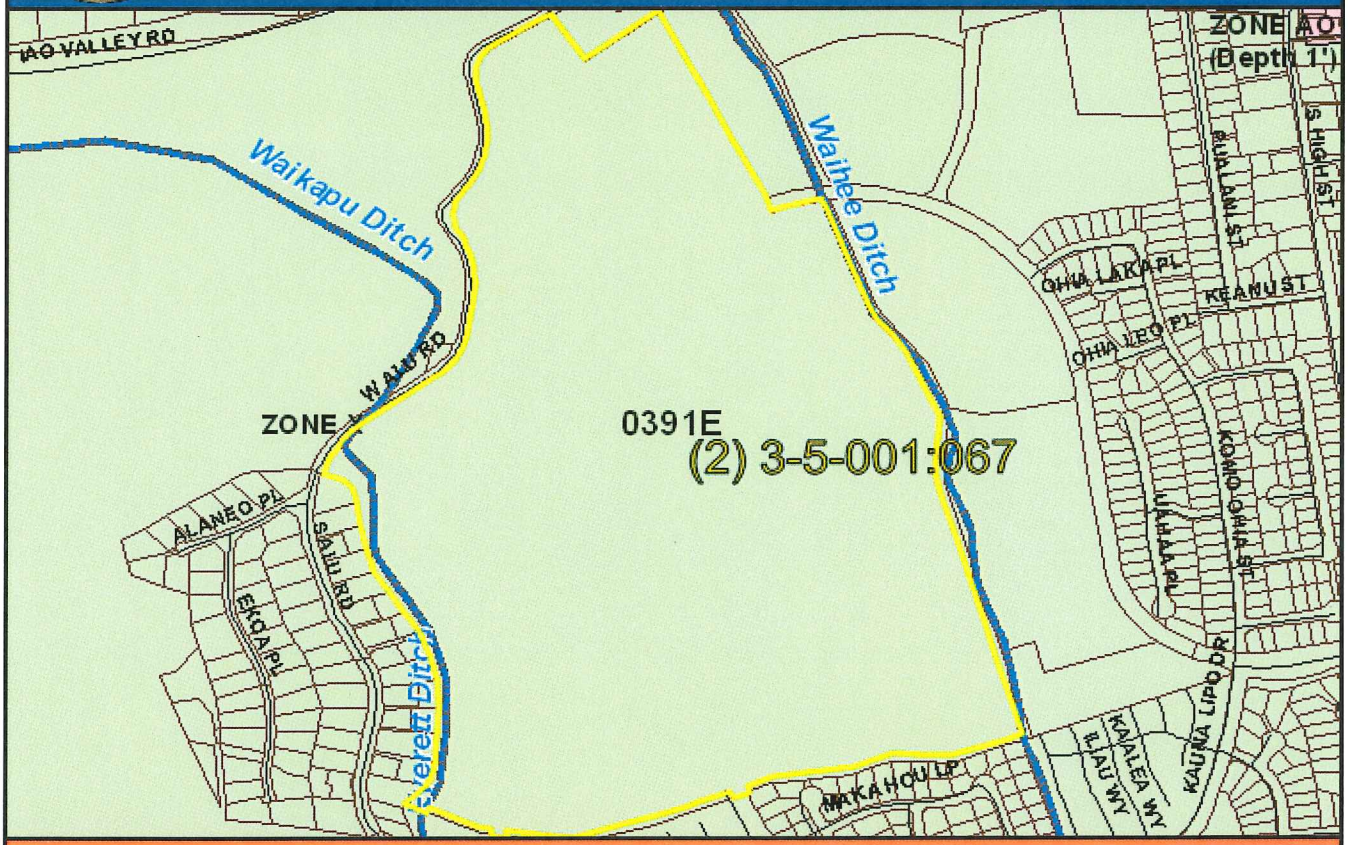
W:\Projects\2013\13041\Dwg\working\MXD\Basin_pump06.dwg

APPENDIX D

Flood Hazard Assessment Report

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- **Zone A:** No BFE determined.
- **Zone AE:** BFE determined.
- **Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY:	MAUI
TMK NO:	(2) 3-5-001-067
PARCEL ADDRESS:	S ALU RD WAILUKU, HI 96793
FIRM INDEX DATE:	SEPTEMBER 19, 2012
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL(S):	1500030391E
PANEL EFFECTIVE DATE:	SEPTEMBER 25, 2009

PARCEL DATA FROM:	JULY 2013
IMAGERY DATA FROM:	MAY 2005

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
County of Maui	
Carolyn Cortez	(808) 270-7253
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

APPENDIX D.

Biological Resources Survey

BIOLOGICAL RESOURCES SURVEY

IAO WATER TREATMENT FACILITY PROJECT

WAILUKU, MAUI, HAWAII

by

ROBERT W. HOBDY
ENVIRONMENTAL CONSULTANT
Kokomo, Maui
August 2013

Prepared for:
Department of Water Supply
County of Maui

BIOLOGICAL RESOURCES SURVEY
IAO WATER TREATMENT FACILITY PROJECT
Wailuku, Maui, Hawaii

INTRODUCTION

The Iao Water Treatment Facility Project is situated on the upper west edge of Wailuku Town adjacent to West Alu Road (see Figures 1 & 2). The project area is approximately 2.3 acres in size (TMK (2) 3-5-01:067). It lies adjacent to and just above the existing Iao Water Tank site and a Maui Electric Company substation on undeveloped land. This study was initiated in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The project area lies on former agricultural land, now fallow, that slopes gently down to the east from the West Maui Mountains at elevations ranging from 575 feet down to 515 feet above sea level. The vegetation consists of a dense growth of tall grasses with a few trees and shrubs. The soil is categorized as Wailuku Silty Clay, 3 to 7% slopes (WvB) which is a deep, well-drained, dark reddish-brown soil developed from alluvium from Iao Valley (Foote et al, 1972). Rainfall averages about 30 inches per year with the bulk falling during a few winter storms.

BIOLOGICAL HISTORY

The original vegetation in this area consisted of a dense low statured native forest and shrubland with such components as ʻōhiʻa (*Metrosideros polymorpha*), ʻaʻaliʻi (*Dodonaea viscosa*), olopua (*Nestegis sandwicensis*), lama (*Diospyros sandwicensis*), halapepe (*Pleomele auwahiensis*), and a variety of ferns, vines and herbaceous plants.

Hawaiians lived in the area for several centuries, farming in the valley bottoms and lowlands and utilizing forest plants for food, construction materials, weapons, fiber and medicines. They altered the landscape somewhat through cultivation and burning.

During the mid 1800s this area was cleared for sugar cane agriculture and the area was cleared, plowed, planted, burned and harvested in continuous cycles for over 100 years. Native ecosystems were replaced by sugar cane and increasing numbers of agricultural weeds.

When sugar production ended in the 1990s this area was converted to cattle grazing. All of these practices, along with recent fires that have swept through the grass lands, have resulted in an environment that is now nearly totally lacking in native plants and animal species.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Iao Water Treatment Facility Project which was conducted in August 2013. The objectives of the survey were to:

1. Document what plant, and animal species occur on the property or may likely occur in the existing habitat.

2. Document the status and abundance of each species.

3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.

4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used for covering the entire project area. An inventory was made on plant species, distribution and abundance and notes were made on terrain and substrate.

DESCRIPTION OF THE VEGETATION

The vegetation within the project area was dominated by one large and densely growing grass, Guinea grass (*Megathyrsus maximus*) which covers the whole area. Two common shrub species included koa haole (*Leucaena leucocephala*) and opiuma (*Pithecellobium dulce*). Four uncommon species of note included swollen fingergrass (*Chloris barbata*), Natal redtop (*Melinis repens*), gycine (*Neonotonia wightii*) and common guava (*Psidium guajava*).

A total of 40 plant species were recorded during the survey. Just one of these was a common dry land native plant, the 'uhaloa (*Waltheria indica*), which is widespread in Hawaii and on many other Pacific islands. The remaining 39 species were pasture plants or agricultural weeds. Many of the smaller species grew along the margins of the project area or in small clearings.

DISCUSSION AND RECOMMENDATIONS

The vegetation throughout the project area is dominated by non-native species that are of no particular environmental interest or concern. Just one common indigenous plant, ‘uhaloa, was found growing in a recently disturbed area. No federally listed Endangered or Threatened plant species (USFWS, 2013) were found, nor do any plants that are candidates for such status occur on the project area. No special plant habitats occur on or near the project and no potential wetlands occur in this dry upland site.

This project is not expected to have any significant negative impacts on the botanical resources in this part of West Maui. No recommendations regarding botanical resources are deemed necessary or appropriate.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within each of two groups: Monocots and Dicots. Taxonomy and nomenclature of the flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1999).

For each species, the following information is provided:

1. Scientific name with author citation
2. Common English or Hawaiian name.
3. Bio-geographical status. The following symbols are used:

   endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.

   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   Polynesian = all those plants brought to Hawaii during the course of Polynesian migrations.

   non-native = all those plants brought to the islands intentionally or accidentally after western contact.

4. Abundance of each species within the project area:

   abundant = forming a major part of the vegetation within the project area.

   common = widely scattered throughout the area or locally abundant within a portion of it.

   uncommon = scattered sparsely throughout the area or occurring in a few small patches.

   rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MONOCOTS			
ASPARAGACEAE (Asparagus Family)			
Asparagus plumosus J.G. Baker	climbimg asparagus fern	non-native	rare
POACEAE (Grass Family)			
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	uncommon
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	rare
Digitaria violascens Link	smooth crabgrass	non-native	rare
Eleusine indica (L.) Gaertn.	wiregrass	non-native	rare
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	non-native	rare
Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass	non-native	abundant
Melinis repens (Willd.) Zizka	Natal redtop	non-native	uncommon
Urochloa subquadripara (Trin.) Webster	----------	non-native	rare
DICOTS			
ACANTHACEAE (Acanthus Family)			
Asystasia gangetica (L.) T. Anderson	Chinese violet	non-native	rare
Thunbergia fragrans Roxb.	white thunbergia	non-native	rare
AMARANTHACEAE (Amaranth Family)			
Alternanthera pungens Kunth	khaki weed	non-native	rare
Amaranthus spinosus L.	spiny amaranth	non-native	rare
ANACARDIACEAE (Mango Family)			
Schinus terebinthifolius Raddi	Christmas berry	non-native	rare
ASTERACEAE (Sunflower Family)			
Calyptocarpus vialis Less.	straggler daisy	non-native	rare
Emilia fosbergii Nicolson	red pualele	non-native	rare
Tridax procumbens L.	coat buttons	non-native	rare
Verbesina encelioides (Cav.) Benth. & Hook.	golden crown-beard	non-native	rare
BIGNONIACEAE (Bignonia Family)			
Spathodea campanulata P. Beauv.	African tulip tree	non-native	uncommon
BORAGINACEAE (Borage Family)			
Heliotropium amplexicaule Vahl	summer heliotrope	non-native	uncommon
Heliotropium procumbens Mill.	four-spike heliotrope	non-native	rare
CASUARINACEAE (She-oak Family)			
Casuarina equisetifolia L.	common ironwood	non-native	rare
EUPHORBIACEAE (Spurge Family)			
Euphorbia hirta L.	hairy spurge	non-native	rare
Ricinus communis L.	Castor bean	non-native	rare
FABACEAE (Pea Family)			
Chamaecrista nictitans (L.) Moench	partridge pea	non-native	uncommon
Crotalaria retusa L.	rattlepod	non-native	rare
Desmodium tortuosum (Sw.) DC.	Florida beggarweed	non-native	rare
Indigofera hendecaphylla Jacq.	creeping indigo	non-native	rare
Leucaena leucocephala (Lam.) de Wit	koa haole	non-native	common
Neonotonia wightii (Wight & Arnott) Lackey	glycine	non-native	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Pithecellobium dulce (Roxb.) Benth.	'ōpiuma	non-native	common
MALVACEAE (Mallow Family)			
Malvastrum coromandelianum (L.) Garcke	false mallow	non-native	rare
Waltheria indica L.	'uhaloa	indigenous	rare
MYRTACEAE (Myrtle Family)			
Eucalyptus robusta Sm.	swamp mahogany	non-native	rare
Psidium guajava L.	common guava	non-native	uncommon
Syzygium cumini (L.) Skeels	Java plum	non-native	rare
NYCTAGINACEAE (Four-o'clock Family)			
Boerhavia coccinea Mill.	scarlet spiderling	non-native	rare
PASSIFLORACEAE (Passion Flower Family)			
Passiflora suberosa L.	cork-bark passion flower	non-native	rare
PROTEACEAE (Protea Family)			
Grevillea robusta A. Cunn. ex R.Br.	silk oak	non-native	rare
SOLANACEAE (Nightshade Family)			
Solanum torvum Sw.	pea aubergine	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails, tracks scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

MAMMALS

Just one non-native mammal, the mongoose (*Herpestes auropunctatus*) was observed during two site visits to the project area. Taxonomy and nomenclature follow Tomich (1986). Deep dense grass made it difficult to see small terrestrial mammals but one would expect there to also be mice (*Mus domesticus*), rats (*Rattus* spp.) and perhaps feral cats (*Felis catus*) in the project area.

A special effort was made to look for the native Hawaiian hoary bat by making an evening survey of the area. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though visibility was excellent. In addition a bat detecting device (Batbox IIID) was used, set to the frequency of 27,000 to 28,000 hertz which is the typical range within which these bats are known to echolocate. No activity was detected using this device.

BIRDS

Birdlife was rather sparse in and around the project area due to the lack of habitat diversity and food resources. Just six species of non-native birds were recorded during two site visits. Taxonomy and nomenclature follow American Ornithologists' Union (2011). Uncommon were zebra dove (*Geopelia striata*), spotted dove (*Streptopelia chinensis*), common myna (*Acridotheres tristis*) and house finch (*Carpodacus mexicanus*), while Japanese white-eye (*Zosterops japonicus*) and gray francolin (*Francolinus pondicerianus*) were rare. A number of other bird species might be expected to frequent this area including, the nutmeg mannikin (*Lonchura punctulata*), chestnut mannikin (*Lonchura malacca*), house sparrow (*Passer domesticus*) and northern cardinal (*Cardinalis cardinalis*). This habitat is not suitable for Hawaii's native forest birds that occur only at higher elevations beyond the range of mosquitoes and the avian diseases they carry and transmit.

REPTILES

One reptile, the mourning gecko (*Lepidodactylus lugubris*) was heard calling at dusk during the evening survey.

INSECTS

A few insect species were seen in the project area during two site visits. Eight species were recorded, representing five insect Orders. Taxonomy and nomenclature follow Nishida et al (1992). Most common were the honey bee (*Apis mellifera*) and the dung fly (*Musca sorbens*). Less common were the Sonoran carpenter bee (*Xylocopa sonorina*), passion flower butterfly (*Agraulis vanillae*) and the large orange sulphur butterfly (*Phoebis agarithe*). One native insect was seen, the green darner dragonfly (*Anax junius*). This indigenous dragonfly is widespread throughout Hawaii and is also found throughout much of North America.

Looked for but not seen was the Endangered Blackburn's sphinx moth (*Manduca blackburni*). None of this moth's specific host plants occur within the project area and no moth's or their larvae were seen.

DISCUSSION AND RECOMMENDATIONS

The wildlife within and around this project area is composed almost entirely of non-native species. Of a total of 1 mammal, 6 birds, 1 reptile, 8 insects, only one indigenous dragonfly, the green darner (*Anax junius*) was recorded. This dragonfly which is widespread in Hawaii also occurs on the American mainland.

No Endangered or Threatened native animals were found during the survey, nor were any found that are candidates for such status. No special wildlife habitats were found either.

As a result of these findings, it is determined that there is little of environmental concern with regard to animal life within the proposed project. The development of this proposed project is not expected to have a significant negative impact on the native wildlife resources in this part of West Maui.

While no protected seabirds were found on the property, the 'ua'u or dark rumped petrel (*Pterodroma sandwichensis*) and 'a'o or Newells shearwater (*Puffinus newelli*) are known to overfly the area at dawn and dusk to their burrows high in the mountains between the months of March and November. In late fall young birds fledge from their burrows to take their first tentative flights out to sea. These inexperienced birds are easily confused and distracted by bright lights and often crash to the ground where they are particularly vulnerable to being run over by vehicles or killed by predators. It is recommended that any significant outdoor lighting such as street lights or flood lights that are incorporated into the project design be shielded to direct the light downward so that it is not visible from above.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within four groups: Mammals, Birds, Reptiles and Insects. For each species the following information is provided:

1. Common name

2. Scientific name

3. Bio-geographical status. The following symbols are used:

   endemic = native only to Hawaii; not naturally occurring anywhere else in the world.
   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
   non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.
   migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.

4. Abundance of each species within the project area:

   abundant = many flocks or individuals seen throughout the area at all times of day.
   common = a few flocks or well scattered individuals throughout the area.
   uncommon = only one flock or several individuals seen within the project area.
   rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS			
Herpestes auropunctatus Hodgson	mongoose	non-native	rare
BIRDS			
Geopelia striata L.	zebra dove	non-native	uncommon
Streptopelia chinensis Scopoli	spotted dove	non-native	uncommon
Acridotheres tristis L.	common myna	non-native	uncommon
Carpodacus mexicanus Muller	house finch	non-native	uncommon
Zosterops japonicus Temmink & Schlegel	Japanese white-eye	non-native	rare
Francolinus pondicerianus Gmelin	gray francolin	non-native	rare
REPTILES			
Lepidodactylus lugubris Dumeril & Bibron	mourning gecko	non-native	rare
INSECTS			
Order DIPTERA - flies			
MUSCIDAE (House Fly Family)			
Musca sorbens Wiedemann	dung fly	non-native	common
Order HETEROPTERA - true bugs			
PSYLLIDAE (Psyllid Family)			
Heteropsylla cubana Crawford	koa haole psyllid	non-native	rare
Order HYMENOPTERA - bees, wasps, ants			
APIDAE (Honey Bee Family)			
Apis mellifera L.	honey bee	non-native	common
Xylocopa sonorina Smith	Sonoran carpenter bee	non-native	uncommon
Order LEPIDOPTERA - butterflies, moths			
LYCAENIDAE (Gossamer-winged Butterfly Family)			
Lampides boeticus L.	long tail blue butterfly	non-native	rare
NYMPHALIDAE (Brush-footed Butterfly Family)			
Agraulis vanillae L.	passion flower butterfly	non-native	uncommon
PIERIDAE (White and Sulphur Butterfly Family)			
Phoebis agarithe Boisduval	large orange sulphur butterfly	non-native	uncommon
Order ODONATA - dragonflies, damselflies			
AESHNIDAE (Darner Dragonfly Family)			
Anax junius Drury	green darner	indigenous	rare

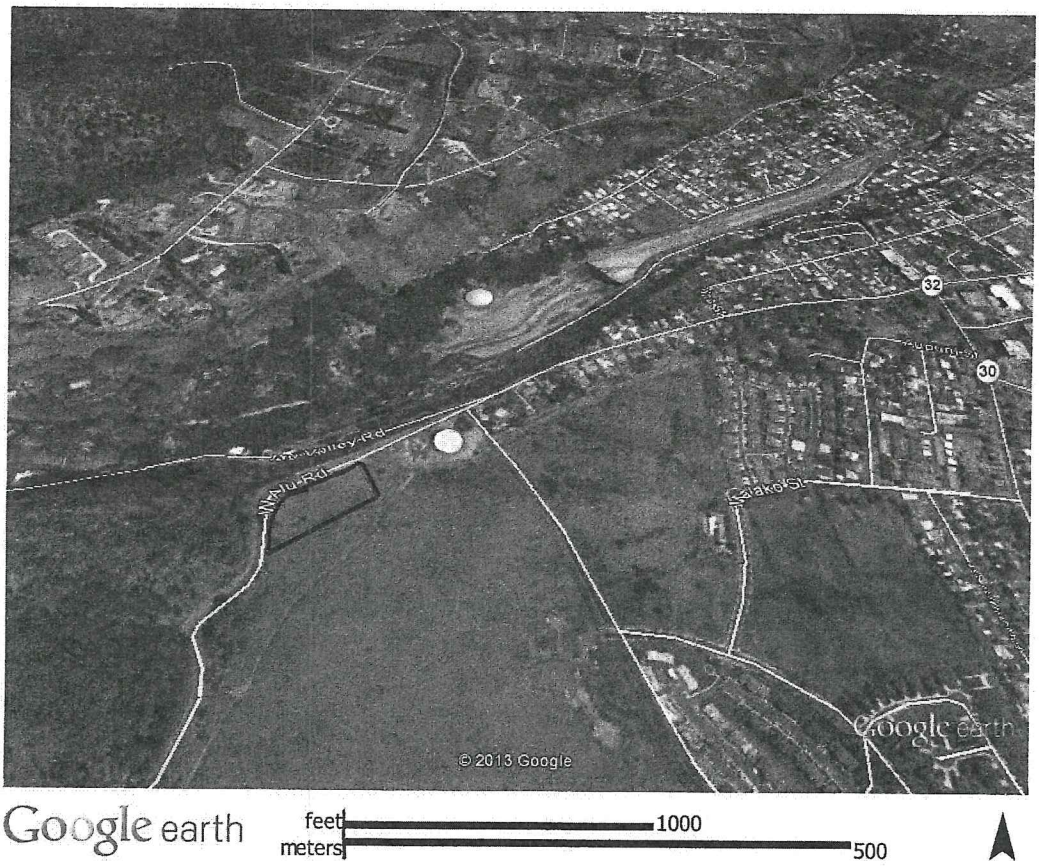


Figure 1. Project location Wailuku, Maui (outlined in black)

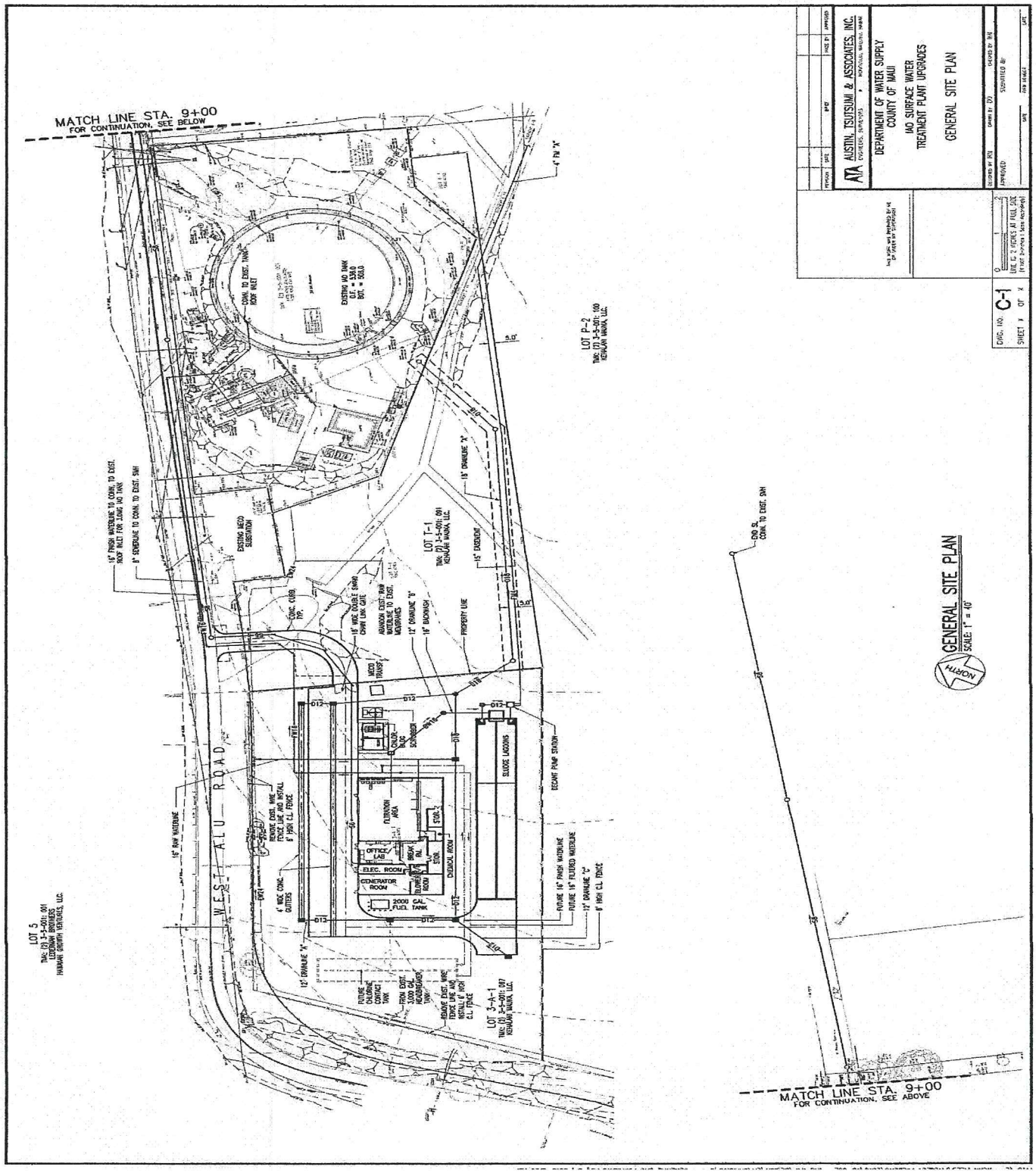


Figure 2. Project Area

Figure 3. View downslope toward project area. A dense growth of Guinea grass with a few koa haole shrubs scattered throughout.

Figure 4. View downslope across project area showing some larger trees.

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APPENDIX E.

Archaeological Assessment

SCS Project Number. 1478-4 AA

AN ARCHAEOLOGICAL ASSESSMENT ON A 2.5-ACRE PARCEL FOR THE IAO WATER TREATMENT FACILITY PROJECT IN `ĪAO, WAILUKU AHUPUA`A, WAILUKU DISTRICT, ISLAND OF MĀUI, HAWAI`I [TMK: (2) 3-05-001:067 por. and 091 por.]

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Revised July 2015
DRAFT

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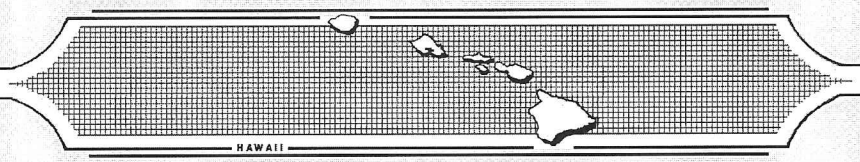
SCIENTIFIC CONSULTANT SERVICES Inc.



1347 Kapiolani Blvd., Suite 408 Honolulu, Hawai`i 96814

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INTRODUCTION

At the request of Munekiyo and Hiraga, Inc., Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey on approximately 2.6-acres of land for the proposed Iao Water Treatment Facility Project in Wailuku, Wailuku Ahupua`a, Wailuku District, Island of Maui, Hawai`i [TMK (2) 3-05-001:067 por. and 091 por.] (Figures 1 and 2). The project area includes portions of two TMK parcels; approximately 2.5 acres of TMK parcel (2) 3-05-001:067 will be utilized for the proposed Water Treatment Facility and approximately 0.1 acre of the adjacent parcel, TMK (2)3-5-001:091, will be utilized for a driveway and waterline easement connecting the project area to West Alu Road.

The overall purpose of the project was to determine the presence or absence of architecture, midden deposits, and/or artifact deposits on the surface of the project area, as well as assess the potential for the presence of subsurface cultural deposits. If sites/historic properties were identified, they were to be evaluated in terms of significance criteria.

Based on archival research, settlement pattern analysis of the project area, and on the results of previous archaeological inventory surveys on several parcels directly surrounding this larger parcel (Dega 2003), it seemed unlikely that historic sites or features would be identified in the project area. Previous archaeological research in the vicinity of the current project area has not yielded many finds, perhaps due to historic land use, which led to massive landscape modifications. Extensive alteration by historic and modern grading and grubbing, as explained more below, has significantly altered the natural topography and vegetation of the parcel.

No archaeological or cultural sites were identified during the current archaeological inventory Survey. For that reason, the Archaeological Inventory Survey has been classified as an Archaeological Assessment. This Archaeological Inventory Survey has been written following with State of Hawai'i Historic Preservation Division (SHPD) Guidelines for Archaeological Inventory Survey reports.

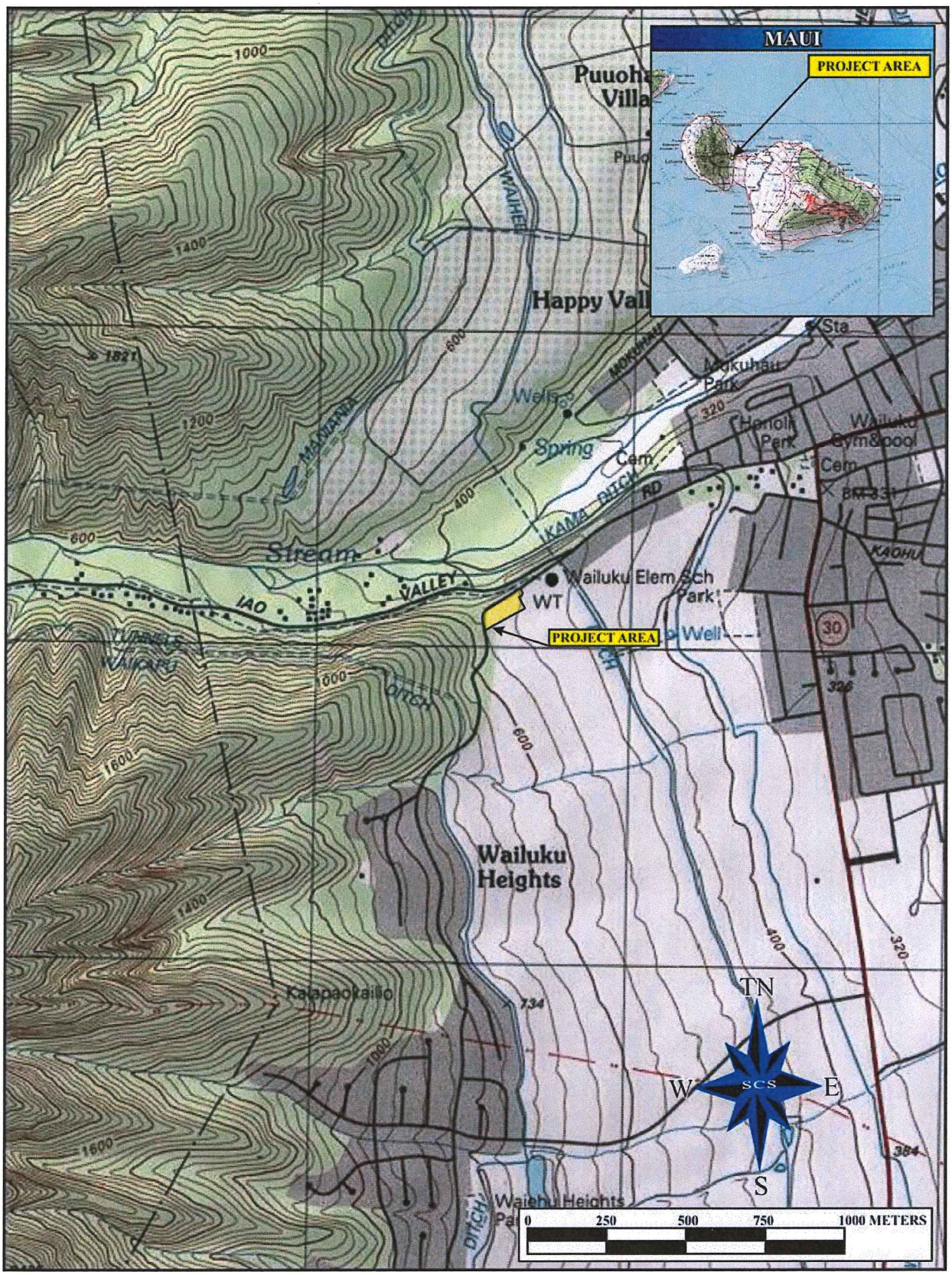

Figure 1: Portion of USGS Topographic Map Showing the Location of the Project Area

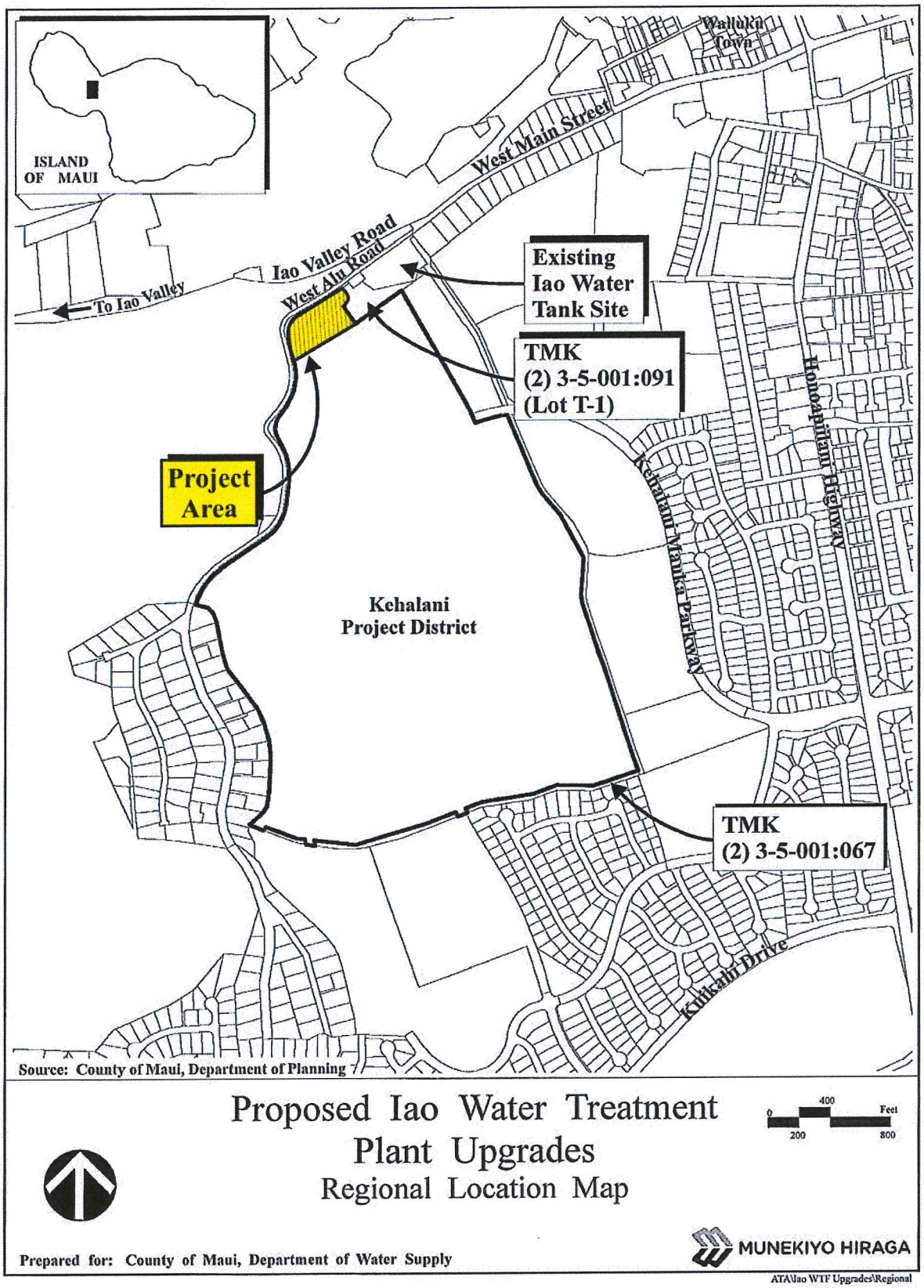

Figure 2: Client-Provided Map Showing the Project Area TMK Parcels.

ENVIRONMENTAL SETTING

PROJECT AREA LOCATION

The project area consists of approximately 2.6 acres of land adjacent to an existing 3.0 million gallon (MG) water tank. The project area is bounded to the west and south by former agricultural land, to the east by an existing Maui Electric Company, Ltd. (MECO) substation and the existing water tank site, and to the north by West Alu Road. The project area is situated on very slightly sloping to flat land at an elevation of c. 500 ft. above mean sea level (amsl) at a distance of 3.9 km (2.4 mi) from the nearest coastline near Kahului Harbor.

SOILS

Soils in the project area consist of Wailuku silty clay (WvB) and Rough Broken Land (rRR) Foote *et al.* 1972:99). The Wailuku Series occurs on 3%-7% slopes and is commonly associated with sugar cane, pasture, and home sites. These are well-drained soils occurring on alluvial fans that have developed from igneous rock. The series profile is composed of reddish-brown silty clay that lies over bedrock. The second series, Rough Broken Land, is characterized by very steep land broken by intermittent drainage channels and occurs on c. 40%-70% slopes. Runoff is rapid and erosion is common. Soil lies over weathered rock, with outcrops, stones, and soil slip common in these areas. The series is associated with watershed and wildlife habitat.

The project area has clearly been remodeled by earthmoving activities associated with construction of the adjacent water tank facility and previously by agricultural and road building activities. Impacts on the parcel have been massive.

VEGETATION

Vegetation on the parcel is dominated by *haole koa*, lowland shrubs, grasses, and small (unidentified) weedy plants. The weeds were ubiquitous, making surface visibility only fair.

CLIMATE

Rainfall in this intermediate, leeward-type environment is very modest. The project area receives an average annual rainfall of only 33 to 44 centimeters (Price 1983:63), with much of this rainfall occurring during the winter months (November–April). Seasonal variation in rainfall amount follows normal orographic patterns for leeward-type areas of Maui. The project area occurs just to the south of what may be considered the leeward-windward boundary. At higher elevations within Wailuku Ahupua`a, the amount of rainfall doubles and triples that of the project area. To the north, from `Īao Stream Valley area toward Waihee Valley, rainfall is much more intensive, with combined rainfall and geographic patterns being more conducive to

traditional types of agricultural cultivation (*i.e.*, *lo`i*, sweet potato). The rain that does fall on the gently sloping project area drains downhill to the east and provides an additional water source for traditional Hawaiian agriculture in the lowland flats to the east of the project area (see Handy and Handy 1972).

TRADITIONAL AND HISTORIC SETTING

Wailuku District inhabits the eastern side of the West Maui Mountains (Mauna Kahalawai) and occupies the isthmus through the center of the island to coastal reaches in Kahului and Mā`alaea. Wailuku, together with Waikapu, Waihee, and Waiehu, is one of the *Na Wai `Eha,* or "the four waters," known for the occupancy of chiefly individuals (Kame`eleihiwa 1992; Pukui and Elbert 1992; and Creed 1993). Wailuku District and Wailuku Ahupua`a are frequently mentioned in historical texts and oral traditional accounts as being politically, ceremonially, and geographically important areas during traditional times (Cordy 1981, 1996; Kirch 1985). Wailuku was considered a "chiefly center" (Sterling 1998:90) with many of the chiefs and much of the area's population residing near or within portions of `Īao Valley and lower Wailuku. The many *heiau* constructed in the Wailuku area point to its ceremonial and religious importance during pre-Contact times. During historic times, after numerous battles in the area, the large concentration of Land Commission Awards granted in Wailuku, particularly in lower `Īao Valley, also attest to a sizeable population base and the importance of the lands for cultivation through time. More recent land use in the area included sugar cane cultivation and use of the land for pasture.

THE TRADITIONAL SETTING OF WAILUKU

Archaeological settlement data indicates that initial colonization and occupation of the Hawaiian Islands first occurred on the windward sides of the main islands, with populations eventually settling into drier leeward areas at later periods (Kirch 1985). In the Waihe`e and Waiehu areas of Wailuku, Kirch (1985:87) notes that "a number of coastal dune midden sites have been reported, and at least one of these contained pearl-shell fishhooks similar to those from the Bellows Site, eroding from the wave-cut midden." (The Bellows site, located on the windward coast of O`ahu, has yielded dates of occupation, albeit controversial, from A.D. 300 to 600 [Pearson *et al.* 1971], one of the earliest dated sites in the Hawaiian Islands. For the most part, these dates have now been diagnosed as very problematical and are no longer valid.) Athens (1997) estimated the initial occupation of the islands took place in the A.D. 9th century based on palynological data. More recent research within Wailuku Ahupua`a indicates that the

area was likely settled between *c.* A.D. 1100 (Kirch 1985:142) and A.D. 1200 (Fredericksen and Fredericksen 1996).

To the north of the current project area lays `Īao Valley, one of the most important locations in the area for prehistoric activity. Connolly (1974:5) states that the pre-Contact valley [`Īao] had a large population base with "most people residing in a settlement near `Īao Needle," just northwest of the project area. Supposedly, the subsistence base of this population consisted of fish and taro, with Kahului Harbor and the coast close by and *lo`i* systems lining `Īao Valley's stream banks. Prehistoric ditches or *`auwai* were utilized in taro cultivation (Connolly 1974:5). Sterling (1998:86) adds that two *`auwai* within the valley:

> ...have existed immemorially and were evidently constructed for the purpose of irrigating *kalo* on the plains which stretch away to the northward and southward of the [`Īao] river. Several minor *`auwai* have, since ancient times, tapped the river at different points lower down and spread the water through the lands in the gulch on either side of the river bed.

Handy, in Sterling (1998:63), notes that "From Waihee and Wailuku Valley, in ancient times, was the largest continuous area of wet taro cultivation in the islands." Cheever (1851:124) writes: "the whole valley of Wailuku, cultivated terrace after terrace, gleaming with running waters and standing pools, is a spectacle of uncommon beauty to one that has a position a little above it."

No discussion of Wailuku is complete without mentioning the important *heiau* complex above `Īao Valley near its seaward terminus. During the mid to late 18$^{th}$ century, the Haleki`i-Pihana *heiau* complex was supposedly designed by a Hawaiian named Kiha (Sterling 1998:89). These monuments, designated as State Site Number 50-50-04-522, are described as very important *heiau* within Hawaiian history. Yent (1983:7) notes the life cycle of the *ali`i* was represented here; it was the place where Kamehameha I's wife was born, Kahekili lived, and Kekaulike died. Thrum (1909:46) reported that Kamehameha I invoked his war god at Pihana Heiau after his warriors defeated Kalanikupuli's forces during the Battle of `Īao in 1790. The two *heiau* are primarily associated with Kahekili, who is connected with the Haleki`i-Pihana complex between *c.* A.D. 1765 and 1790, and Kamehameha, during his conquering of Maui in 1792 (Yent 1983:18). Haleki`i and Pihana Heiau are the only remaining pre-Contact Hawaiian structures of religious and historical importance in the Wailuku-Kahului area that are easily accessible to the public (Estioko-Griffin and Yent 1986:3).

The Wailuku area was also witness to many battles, from the Battles of `Īao and Sand Hills to the Battles of Kepaniwai and Kakanilua. The most famous battle was that of Kepaniwai where Kamehameha I, in July 1790, finally wrested control of Maui Island. Kamehameha I and his warriors landed at the Kawela portion of Kahului Bay and proceeded up `Īao and other valleys to score a decisive victory. Wailuku, meaning water of destruction, succinctly describes the area in which many of these major battles occurred. Of additional note is that in the Kauahea area of `Īao Valley warriors apparently dwelt and were "trained in war skills and there was a boxing site in the time of Kahekili" (Sterling 1998:89).

TRADITIONAL SETTING OF THE PROJECT AREA AND ENVIRONS

Creed (1993) has written extensively on the traditional background of the Waikapu-Wailuku area, much of which directly applies to the open landscape of the current project area, just to the north of Waikapu. Many classes of sites are found or may have existed in the Waikapu-Wailuku area during traditional times. Creed (1993:19–21) provides an extensive list, including some site types that would not apply to the current parcel due to its distance from major drainages, the coastline, and its open land classification. Traditional sites that would apply include agricultural sites (*kula* lands, *wauke* patches, *hala* trees, pigs, and potato patches), boundary walls, burials (sometimes located in habitation terraces), feather gathering areas (particularly in the mountains to the west), habitation loci, and *pohaku* (an adze stone marks the border between Wailuku and Waikapu). While populations were predominantly centered in `Īao Valley and Waikapu Valley, there was agricultural and habitation activity in the open grasslands of the current project area above the coastal flats.

HISTORICAL TIMES

The project area is located in the district of Wailuku. Wailuku District is known for its dry, arid lands with few perennial streams. Most of Wailuku was an arid region, including its long, low seashore, vast stony *kula* lands, and broad uplands. The exceptions were the lands along Īao Stream Valley and further to the west/northwest past Waihee and Waiehu. However, even the vast stony kula lands were utilized during traditional and historic times. Most evidence for such land utilization has come from historic records.

In 1848, during the late historic period, commissioners of the Great *Mahele* instigated an extreme modification to traditional land tenure on all islands that resulted in a division of lands and a system of private ownership. The *Māhele* was based upon the principles of western law.

While a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kauikeaouli (Kamehameha III) was forced to establish laws changing the traditional Hawaiian society to that of a market economy (Kuykendall Vol. I 1938:145 footnote 47 *et passim*; Daws 1968:111; Kame`eleihiwa 1992:169–170, 176). The dramatic shift from a redistributive economy to a market economy resulted in drastic changes to land tenure, among other things. Case in point, foreigners demanded private ownership of land to ensure their investments (Kuykendall Vol. I 1938: 145 *et passim*; Kame`eleihiwa 1992:178; Kelly 1998:4).

Once lands were made available and private ownership was instituted, native Hawaiians, including the *maka'āinana* (commoners), were able to claim land plots upon which they had been cultivating and living. Oftentimes, foreigners were simply just given lands by the *ali`i*. However, in the case of commoners, they would only make claims only if they had first been made aware of the foreign procedures (*kuleana* lands, land commission awards). These claims could not include any previously cultivated or currently fallow land, *okipu*, stream fisheries, or many other natural resources necessary for traditional survival (Kame`eleihiwa 1992:295; Kirch and Sahlins 1992). Awarded parcels were labeled as Land Commission Awards (LCAs). If occupation could be established through the testimony of witnesses, the petitioners were issued a Royal Patent number and could then take possession of the property. (Chinen 1961:16).

During the *Māhele*, Wailuku District was declared Crown Land and numerous Land Commission Awards, approximately 180, were awarded within Wailuku Ahupua`a while approximately 100 were awarded for Waikapu Ahupua`a (Creed 1993). A handful of foreigners (*i.e.*, Anthony Catalena, James Louzada, E. Bailey) gained control of large parcels of lands that would later be used for mass cultivation of sugar. Significantly, the majority of LCAs were awarded to Hawaiians, a gauge that can be used to measure pre-Contact settlement, since there was little overall change in traditional land use among Hawaiians prior to 1853 (Creed 1993:38).

By the 1850s, most of the LCAs for the area describe almost no cultivation, due to fact that traditional land utilization was rapidly and dramatically supplanted by sugar cane cultivation and pastureland during the 1850s (Creed 1993:74; Dorrance and Morgan 2000). Sites and features built during this period include water irrigation ditches, terraces, freestanding walls, historic houses, and mill structures. In the post-Contact or Historic period, the Wailuku-Waikapū landscape was dominated by cash crops. Water was channeled from traditional sources (e.g., Waikapū Stream) through plantation lands making access for individual use impossible. This area was also an important transportation corridor linking both the southern and northern flanks of the Maui isthmus, with Honoapi'ilani Highway having been demarcated as a

Government Road on area maps by 1882 (Creed 1993:20).

Historic utilization of the Waikapu-Wailuku landscape within and near the project area focused on industrial-levels of cultivating sugar cane and pineapple. Water was channeled from traditional sources (*e.g.*, Waikapu Stream, western aquifers or springs) through plantation lands. Evidence for expansive landscape modifications to accommodate the industrial-level of production is very evident across and near the current subject parcel in the form of the north-south oriented Kama Ditch and Waihee Ditch. The significant amount of plastic and rubber tubing found across the surface of the project area attests to even more recent utilization of the open landscape for cultivation. These former sugar cane and pineapple lands are now being reclaimed through residential developments.

PREVIOUS ARCHAEOLOGY

In terms of general projects in the Wailuku-Waikapu environs, the earliest archaeological endeavors on Maui were undertaken by Thrum (1909), Stokes (1918), Emory (1921), and Walker (1931). None of their archaeological finds directly pertain to the current project area; however, their data allows for a deeper understanding of the traditional use of the Wailuku-Waikapu area. Of interest for the present study are the results from two previous studies that included the current project area (Dega 2003 and Dega 2004) and a handful of projects conducted to the south and east of the current project area, in a similar environment (Figure 3).

Donham (1992) identified human skeletal remains during construction of the Maui Homeless Shelter (SIHP 50-50-04-2916) east of Waiale Road.

Dunn and Spear (1995) identified three pre-Contact sites in sand along Waiale Road during Archaeological Monitoring for the installation of a sewer pipeline. Site 50-50-04-4005 consisted of a single, disturbed human burial located in fill material; Site 50-50-04-4067 was a hearth and Site 50-50-04-4068 was an assemblage of 34 features that included 13 human burials and 21 habitational features. A single radiocarbon sample obtained from the hearth provided a radiocarbon date of A.D. 1434 to 1669 (98% probability at 2 Sigma).

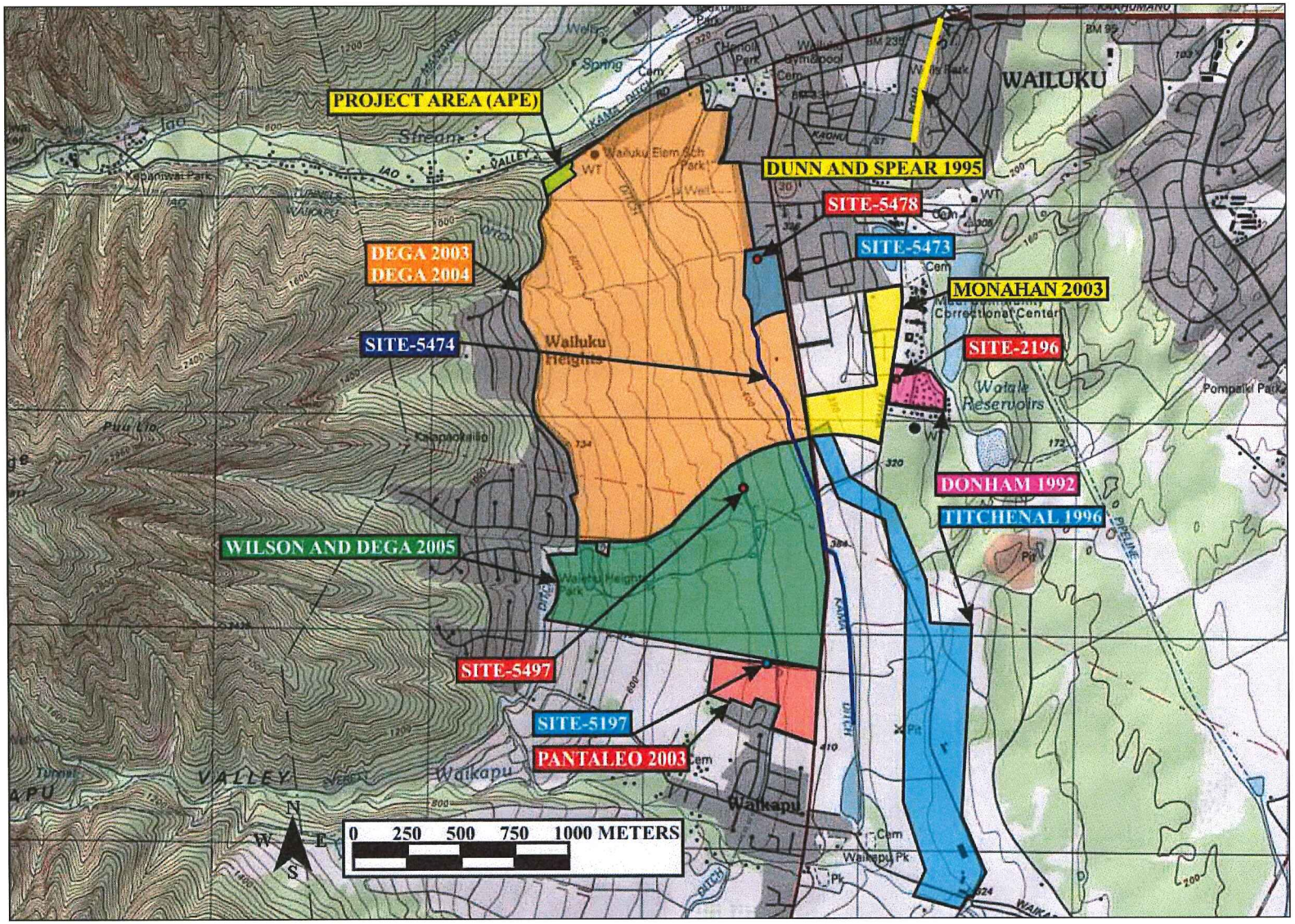

Figure 3: Portion of USGS Topographic Map Showing Previous Archaeological Studies in the Vicinity of the Project Area.

Titchenal (1996) conducted an archaeological inventory survey (AIS) for a proposed water retention basin and associated lands within both Waikapū and Wailuku Ahupua`a along Waiale Road (see Figure 4). Although subsurface and surface testing during the survey provided negative results, Archaeological monitoring was recommended for future ground disturbance activity, due to the presence of sand dunes nearby the project area.

Pantaleo (2003) conducted an AIS on nearly 30-acre parcel in Waikapū Ahupua'a, south of the current project area. Pantaleo identified a segment of the Waihe'e Ditch (SIHP 50-50-04-5197), which was constructed between 1905 and 1907, originally for irrigation for central Maui sugarcane lands (Wilcox 1996). The Historic irrigation ditch was the only Site discovered in the project area, which had been previously disturbed by sugarcane and pineapple cultivation (Pantaleo 2003).

Monahan (2003) conducted an AIS on Kehalani lands just to the east of Honoapi'ilani Highway (Monahan 2003). This survey failed to produce any structures or artifact scatters. Trench excavation demonstrated a fairly consistent subsurface stratigraphy with a thick layer of dark brown silt (Layer II) inclusive of historical garbage (i.e., black plastic and rubber tubing, white plastic irrigation pipes, and black plastic sheeting) over an undisturbed very dark grayish-brown silty clay subsurface (Layer III). A dark brown, silty root mat-layer (Layer I) was present in some units. No undisturbed sandy deposits were encountered, although a few trenches close to the eastern boundary of the project area did contain thin lenses of yellowish-brown sand. These sand lenses were clearly introduced as recent fill. In total, pedestrian survey and subsurface testing demonstrated that both parcels had been extensively altered through grading and other earthmoving activities associated with historic construction (of water features) and cultivation.

In 2003, SCS conducted an AIS on approximately 100 acres (including the current project area) for the Kehalani Mauka Subdivision (Dega 2003). Three sites were identified; the ca. 1922 Hopoi Reservoir (SIHP 50-50-04-5473), the Kama Ditch (-5474) and a basalt adze (SIHP -5478). Subsurface testing revealed no cultural material. No archaeological or cultural sites or features were found in the current project area during the 2003 survey.

In 2004, SCS conducted Phase II investigations of the same Kehalani Mauka Subdivision project area and identified six additional Historic sites, including three lesser east-west irrigation ditches (50-50-04-5490), a north-south ditch (-5493), Waihe'e Ditch (-5197),segments of a Historic-Modern roadway (SIHP -5489), Historic surface artifact scatter (SIHP -5491) and

several plantation era clearing mounds (SIHP -5492) (Dega 2004). . No archaeological or cultural sites or features were found in the current project area during the 2004 survey.

Wilson and Dega (2005) conducted AIS on 215.8 acres south of the current project area, finding seven Historic sites related to sugarcane production (see Figure 4). The project area was completely composed of abandoned cane land, and sites included two major irrigation ditches (SIHP 50-50-04-5197 Waihe'e Ditch and -5493 Waikapu Ditch), two smaller ditches, a reservoir, erosion-control earthen berms, and a cane-haul dirt road "Old Waikapu Road". No artifacts or cultural deposits were identified at the surface or sub-surface level. The project area remains mainly under abandoned cane land.

SETTLEMENT PATTERN

Archival research and analyses of the generalized settlement pattern for Wailuku District have been the foremost sources for discerning an established settlement pattern for the current project area.

Archaeological evidence suggests that early settlement in the Hawaiian Islands occurred along windward shoreline areas between the A.D. 4th and 11th centuries. Pollen evidence suggests a settlement date of the A.D. 9th century (see Athens 1997). For the most part, these populations used local resources and seldom ventured into upland valleys. Cordy (in Creed 1993) suggests, however, that upper valley areas on windward coasts were likely populated before the A.D. 1100s. Coastal settlement was still dominant, but populations began exploiting and living in more upland kula zones. Greater population expansion to inland areas did not occur until the c. A.D. 12th century but continued through the 16th century. Large scale or intensive agricultural endeavors were implemented in association with habitation. Coastal lands were used for settlement and taro was cultivated in near-coastal reaches and in the uplands. Upland areas of Maui such as the Waiohuli-Kula area contained large garden enclosures, ceremonial structures, and permanent habitation sites by c. A.D. 1600.

Nearer the coast in intermediate lands (c. 60–85 meters amsl), taro was cultivated along stream courses, dryland taro was grown on kula lands such as the project area, and populations were settled. It is possible that the kalo patches described in the aforementioned LCA accounts originated during the "Expansion Period" of A.D. 1400 to 1600, perpetuating through historic times (Kirch 1985). However, almost no traditional cultivation occurred in the area during the 1850s as pasture land and sugar cane cultivation were already dominating the use of the land

(Creed 1993:74). Primary settlement and resource zones lay outside the current medial environmental zone in Wailuku proper, near perennial water sources (`Īao Valley, Waihee, Waiehu). The only substantial settlement along this medial isthmus zone between 300 and 600 feet amsl was at Waikapu, to the south of the current project area, near the base of Waikapu Stream Valley (see Creed 1993). As the current project area does not contain a perennial water source and is primarily open grassland, the area is considered to lie at the periphery of the more resource-rich zones in Wailuku.

Historic utilization of the Wailuku-Waikapu landscape was dominated by the cash cropping of sugar cane and pineapple, made possible by water channeled from traditional sources (e.g., Waikapu Stream) through plantation lands. Historic features associated with this period are represented as water features in the form of reservoirs (Hopoi Reservoir) and water channels (Kama Ditch, Waihee Ditch). This area was also an important transportation corridor linking both the south and north flanks of the Maui isthmus, with Honoapi'ilani Highway having been demarcated as a Government Road on area maps by 1882 (Creed 1993:20).

Cultivation of sugarcane began to the north in `Īao Valley area during the 1850s. Sugarcane became the dominant crop cultivated in the area and provided occupational opportunities for both local and non-local residents. Sugarcane cultivation brought the expansion of irrigation and processing structures across the landscape including irrigation ditches, mills, and other infrastructure supporting sugar production. During the 20th century, sugarcane cultivation continued on an intensive scale. A Portuguese worker camp was located within `Iao Valley, the camp providing residence to plantation workers. The 1916 flood erased this camp and a rock crusher installed several years previously. After the flood, the sugarcane plantations rebuilt many of the irrigation ditches and mill stations destroyed during the flood. Sugarcane continued to be the dominant activity in the `Iao Valley area, only small taro plots still being cultivated. To the south/southwest of the current project area, land was utilized during World War II as a military training area. In addition, ranching became a viable activity in the `Iao Valley area, particularly in mauka areas below the precipitous cliffs of the West Maui mountain range. Lower reaches of `Īao Valley currently has many residences, which lead downslope into the well-developed Wailuku Town.

METHODS

Fieldwork was conducted on August 30, 2013 by SCS personnel Ian Bassford, B.S. under the overall direction of Michael Dega, Ph.D. (Principal Investigator). The inventory survey included a 100% pedestrian survey of the project area in <5 m transects. Numerous photographs were taken of the well location and overall project area in addition to written notes and descriptions of the topography and natural environment.

Archival research entailed investigating the historic and archaeological background of the general project area. This examination included a documentary search of previous archaeological research conducted in this region of Maui as well as a review of archival literature relating to Land Commission Awards and local mythology. The review of historical documents was accomplished in order to understand the impact of post-Contact events on the cultural and archaeological landscape of the region.

RESULTS OF FIELDWORK

The project area consists of an approximate 2.5-acre parcel located along Alu Road and adjacent to an existing 3.0 MG water tank (Figures 3-7). The ground surface and subterranean reaches of the parcel have been heavily modified through time, given intensive industrial sugar cane plantation cultivation in the area, as well as mechanical grading activities for the existing tank. The survey was negative for both surface materials and areas thought to potentially contain subsurface cultural materials.

The archaeological assessment included a pedestrian inspection of the project area with photographic and written documentation of the proposed well site. No new sites, surface features or midden scatters were identified during the pedestrian survey. Historic and modern agricultural and water tank construction activities adjacent to the current project area has clearly impacted the project areas ground surface and likely destroyed any surface deposits and possibly any near surface cultural deposits or artifacts.

Figure 4: Aerial Photograph Showing Location of Project Area (Google Earth 2013).

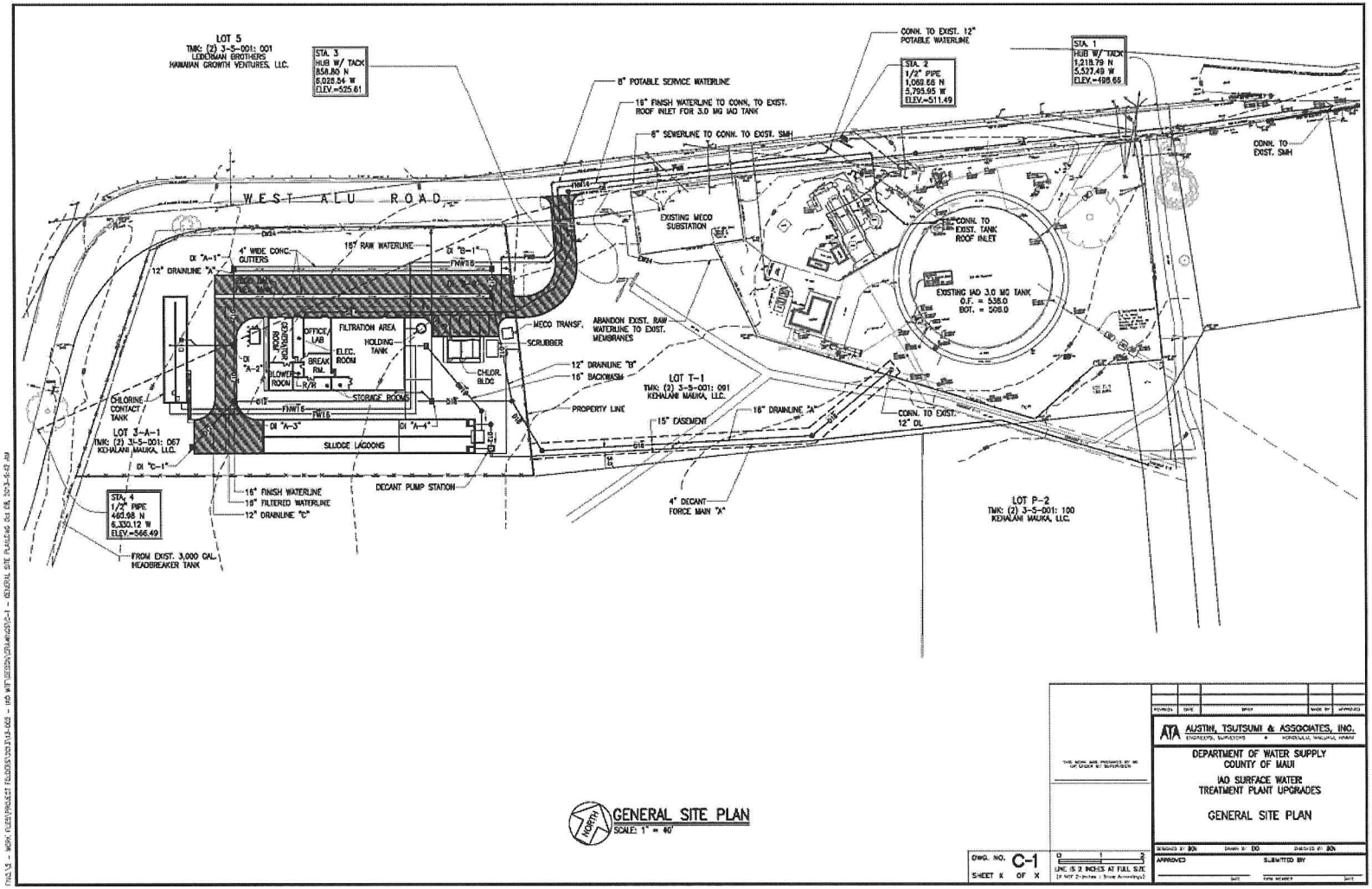

Figure 5: Plan View of Proposed Work Site (Courtesy of Munekiyo and Hiraga, Inc.).

Figure 6: View Northeast Showing Proposed Location for Proposed Work Site.

Figure 7: View North of Proposed Work Site.

SUMMARY AND CONCLUSIONS

on August 30, 2013, SCS conducted an Archaeological Inventory Survey (AIS) of portions of two TMK parcels, the study area totaled approximately 2.6acres for the proposed Iao Water Treatment Facility Project in Wailuku, Wailuku Ahupua`a, Wailuku District, Island of Maui, Hawai`i [TMK (2) 3-05-001:067 por. and 091 por.]

Based on the historic use of the project area as well as the results of previous archaeological studies in and around the project area, it was determined that any pre-contact surface features and/or shallow sub-surface deposits would likely have been destroyed by agricultural development, and that potential site types in the project area might include historic features or deposits related to agricultural production.

The current AIS, including a 100% pedestrian survey of the project area, did not lead to the identification of any surface cultural remains. Historic and modern era agricultural and water storage construction activities in the parcel have likely disturbed any previously existing sites or surface deposits. Because there were no finds this fieldwork is being reported as an Archaeological Assessment. It is our estimation, based on the results of this Archaeological Assessment, that the proposed undertaking would not have an adverse impact on any archaeological sites or features.

ARCHAEOLOGICAL MONITORING

Archaeological Monitoring is not recommended during the construction activities for the proposed water tank work. However, should the inadvertent discovery of significant cultural materials and/or burials occur during construction, all work in the immediate area of the find must cease and the SHPD be notified to discuss mitigation.

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APPENDIX F.

Cultural Impact Assessments

IAO WATER TREATMENT PLANT UPGRADES
Cultural Impact Assessment Interview

Interviewed With: Carl Izumi
Interview Date: 10/19/2013
Interviewed By: Bryan Esmeralda, Analyst

The interview with Carl Izumi took place on October 19, 2013 at the Munekiyo & Hiraga, Inc. office in Wailuku, Maui.

Carl Izumi was born and raised on Maui, attended the University of Louisville in Kentucky after graduating from Baldwin High School, and until a few years ago, co-owned a veterinary supply company in Honolulu where he currently resides. Although he now resides in Honolulu, Carl is a Maui boy at heart. Born into a family of all male siblings, Carl, his twin brother, and their older brother lived with their parents on Vineyard Street in Wailuku where their father's medical practice was located until the twins were 5 years old. It was at this time that the family relocated, and moved up the street into the house on Alu Road directly below the site of the Iao Water Tank. The proposed Iao Water Treatment Plant is located adjacent to the Iao Water Tank.

Carl recalls that when the family moved into the house, the water tank already existed in its current location. The tank site, and its location set back from the roadway and within undeveloped open land, provided a recreational area for Carl and his brothers. Here they would play in the shadow of the tank and in the open fields that surrounded it.

In the years that he lived in the house, and through the years in which his family owned it after his leaving the island (over 40 years), Carl does not recall any cultural practices taking place in the vicinity of the Iao Water Tank. The tank is located on the slopes of the West Maui Mountains, and near the entrance to Iao Valley, both culturally significant areas to Native Hawaiians, but the land underlying the tank itself did not play host to any cultural practices.

Currently, the lands are undeveloped or slated for development by the nearby Kehalani Master Planned Community. Prior to this development, the lands were utilized for agricultural purposes for many years. Historically, the area was used for sugar cane cultivation, followed by cattle grazing, which ceased in the late 1990's.

The Izumi family did not experience any problems or hardships as a result of their close proximity to the tank. Noise or air pollution as a result of any maintenance activities did not present a burden on the family, nor did the normal day-to-day operations cause adverse impacts on the living conditions for Carl and his family.

Although the tank site is located near Iao Valley, one of the most culturally significant areas on the island, the site itself holds no significant cultural value today.

IAO WATER TREATMENT PLANT UPGRADES
Cultural Impact Assessment Interview

Interviewed with: Tomiko "Helen" (Fukushima) Yamagata
Interview date: November 19, 2014
Interviewed by: Charlene Shibuya, Senior Associate, Munekiyo & Hiraga, Inc.

Mrs. Yamagata was interviewed at her residence located at 2317 Vineyard Street in Wailuku town for her recollections of the vacant lands above the Iao water tank off West Alu Road.

She was born in Paia in 1919 and later attended Keahua Elementary school in an old planation camp that is no longer in existence today. During her childhood, she grew up in Camp 13 of the former Puunene plantation village until she moved back to Paia when she was eighteen (18) years old and became a dress maker at Ikeda Store in Lower Paia.

Helen was not able to attend high school but took up English at Maui Community College and some art classes from Hajime Fujimoto, Art Teacher from Baldwin High School. She returned to live on Kahookele Street in Wailuku at about age 27 to continue as a seamstress and worked for Alice Ideta, Professional Designer whose business was located on Main Street above the former Kress Store building. After the war, business got slow but she continued as a self-employed seamstress.

She married in 1947 and eventually moved to her current address on Vineyard Street and has lived in Wailuku town at that home for about the past 67 years. Her occupation continued as a seamstress working from home while raising her two daughters. This residence is located only about 0.57 miles from the project site and she is very familiar with the project surrounding. After her daughters grew up, she was an avid runner and later walker her covered many routes and long distances in the Wailuku area daily. Her past recollections of the project site is that the existing water tank existed before the initial increment of the Wailuku Heights residential subdivision was built. The surrounding area was all cane field cultivation and throughout the decades, she has not seen any cultural or gathering practices on the project site and surrounding area.

APPENDIX G.

Zoning and Flood Confirmation Forms

REVISED COPY

COUNTY OF MAUI
DEPARTMENT OF PLANNING
One Main Plaza Building
2200 Main Street, Suite 335
Wailuku, Hawaii 96793

Zoning Administration and
Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

ZONING AND FLOOD CONFIRMATION FORM

(This section to be completed by the Applicant)

APPLICANT NAME Munekiyo & Hiraga, Inc. TELEPHONE 808-244-2015

PROJECT NAME Proposed Iao Water Treatment Plant Upgrades E-MAIL planning@mhplanning.com

PROPERTY ADDRESS S. Alu Road near Inters. w/Iao Valley Road TAX MAP KEY (2) 3-5-001:067 (por.)

☐ Yes ■ No **Will this Zoning & Flood Confirmation Form be used with a Subdivision Application?**
IF YES, answer questions A and B below and comply with instructions 2 & 3 below:

A) ☐ Yes ☐ No **Will it be processed under a consistency exemption from Section 18.04.030(B), MCC?**
IF YES, which exemption? (No. 1, 2, 3, 4 or 5) _____

B) State the purpose of subdivision and the proposed land uses (*ie 1-lot into 2-lots for all land uses allowed by law*):

INSTRUCTIONS:

1) **Please use a separate Zoning & Flood Confirmation Form for each Tax Map Key (TMK) number.**
2) **If this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes & bounds of the subject parcel and of each district/designation including any subdistricts.**
3) **If this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.**

(This section to be completed by ZAED)

LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMATION: [1]

☐ (SMA) Special Management Area

STATE DISTRICT: ■ Urban ☐ Rural ☐ Agriculture ☐ Conservation

MAUI ISLAND PLAN
Growth Boundary: [2] ■ Urban ☐ Small Town ☐ Rural ☐ Planned Growth Area ☐ Outside Growth Boundaries
Protected Area: [2] ☐ Preservation ☐ Park ☐ Greenbelt ☐ Greenway ☐ Sensitive Land ■ Outside Protected Areas

COMMUNITY PLAN: [2] PD3-Project District 3 (Kehalani)

COUNTY ZONING: PD3 - WK/3 (Wailuku) SUB ZONE NOT DESIGNATED

OTHER/COMMENTS: zoning is based on a previous attached map submitted back in 6/2014 for said project

☐ (PD) Planned Development
■ (PH) Project District
☐ See Additional Comments (Pg.2)
☐ See Attached LUD Map

FEMA FLOOD INFORMATION:

FLOOD HAZARD AREA ZONES [3] & BASE FLOOD ELEVATIONS: X

☐ FEMA DESIGNATED FLOODWAY For Flood Zone AO, FLOOD DEPTH:

☐ FLOOD DEVELOPMENT PERMIT REQUIRED (Zones V, VE, A, AO, AE, AH, D, & Floodways)

SUBDIVISION LAND USE CONSISTENCY: ☐ Not Consistent, (LUDs appear to have NO permitted uses in common).

_____ (Signature)
☐ Not Applicable, (Due to processing under consistency exemption No. ☐1, ☐2, ☐3, ☐4, ☐5).
☐ Interim Zoning, (The parcel or portion of the parcel that is zoned interim shall not be subdivided).

☐ [4] Consistent, (LUDs appear to have ALL permitted uses in common).
☐ [4] Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.
☐ [4] Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2).

NOTES:

1 The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change In Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.
2 Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.
3 Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway. Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100-year flood inundation limits; base flood elevations; drainage reserves.
4 Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement [Section 18.04.030.D, Maui County Code].

REVIEWED & CONFIRMED BY:

John Rapacz 3/23/15

_____ (Signature) _____ (Date)

For: John S. Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division

REVISED COPY

COUNTY OF MAUI
DEPARTMENT OF PLANNING
One Main Plaza Building
2200 Main Street, Suite 335
Wailuku, Hawaii 96793

Zoning Administration and
Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

ZONING AND FLOOD CONFIRMATION FORM

(This section to be completed by the Applicant)

APPLICANT NAME Munekiyo & Hiraga, Inc. TELEPHONE 808-244-2015

PROJECT NAME Proposed Iao Water Treatment Plant Upgrades E-MAIL planning@mhplanning.com

PROPERTY ADDRESS S. Alu Road near Inters. w/Iao Valley Road TAX MAP KEY (2) 3-5-001:091 (por.)

☐ Yes ■ No **Will this Zoning & Flood Confirmation Form be used with a Subdivision Application?**
IF YES, answer questions A and B below and comply with instructions 2 & 3 below:

A) ☐ Yes ☐ No **Will it be processed under a consistency exemption from Section 18.04.030(B), MCC?**
IF YES, which exemption? (No. 1, 2, 3, 4 or 5) _____

B) State the purpose of subdivision and the proposed land uses (*ie 1-lot into 2-lots for all land uses allowed by law*):

INSTRUCTIONS:

1) **Please use a separate Zoning & Flood Confirmation Form for each Tax Map Key (TMK) number.**
2) **If this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes & bounds of the subject parcel and of each district/designation including any subdistricts.**
3) **If this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.**

(This section to be completed by ZAED)

LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMATION: [1]

☐ (SMA) Special Management Area

STATE DISTRICT: ■ Urban ☐ Rural ☐ Agriculture ☐ Conservation

MAUI ISLAND PLAN
Growth Boundary: [2] ■ Urban ☐ Small Town ☐ Rural ☐ Planned Growth Area ☐ Outside Growth Boundaries
Protected Area: [2] ☐ Preservation ☐ Park ☐ Greenbelt ☐ Greenway ☐ Sensitive Land ■ Outside Protected Areas

COMMUNITY PLAN: [2] PD3-Project District 3 (Kehalani)

COUNTY ZONING: PD3 - WK/3 (Wailuku) SUB ZONE NOT DESIGNATED

OTHER/COMMENTS: zoning is based on a previous attached map submitted back in 6/2014 for said project

☐ (PD) Planned Development
■ (PH) Project District
☐ See Additional Comments (Pg.2)
☐ See Attached LUD Map

FEMA FLOOD INFORMATION:

FLOOD HAZARD AREA ZONES [3] & BASE FLOOD ELEVATIONS: X

☐ FEMA DESIGNATED FLOODWAY | For Flood Zone AO, FLOOD DEPTH:

☐ FLOOD DEVELOPMENT PERMIT REQUIRED (Zones V, VE, A, AO, AE, AH, D, & Floodways)

SUBDIVISION LAND USE CONSISTENCY: ☐ Not Consistent, (LUDs appear to have NO permitted uses in common).

_____ (Signature)
☐ Not Applicable, (Due to processing under consistency exemption No. ☐1, ☐2, ☐3, ☐4, ☐5).
☐ Interim Zoning, (The parcel or portion of the parcel that is zoned interim shall not be subdivided).

☐ [4] Consistent, (LUDs appear to have ALL permitted uses in common).
☐ [4] Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.
☐ [4] Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2).

NOTES:

1 The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change In Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.
2 Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.
3 Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway; Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100-year flood inundation limits; base flood elevations; drainage reserves.
4 Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement [Section 18.04.030.D, Maui County Code].

REVIEWED & CONFIRMED BY:

_____ (Signature) 3/23/15 (Date)

For: John S. Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division

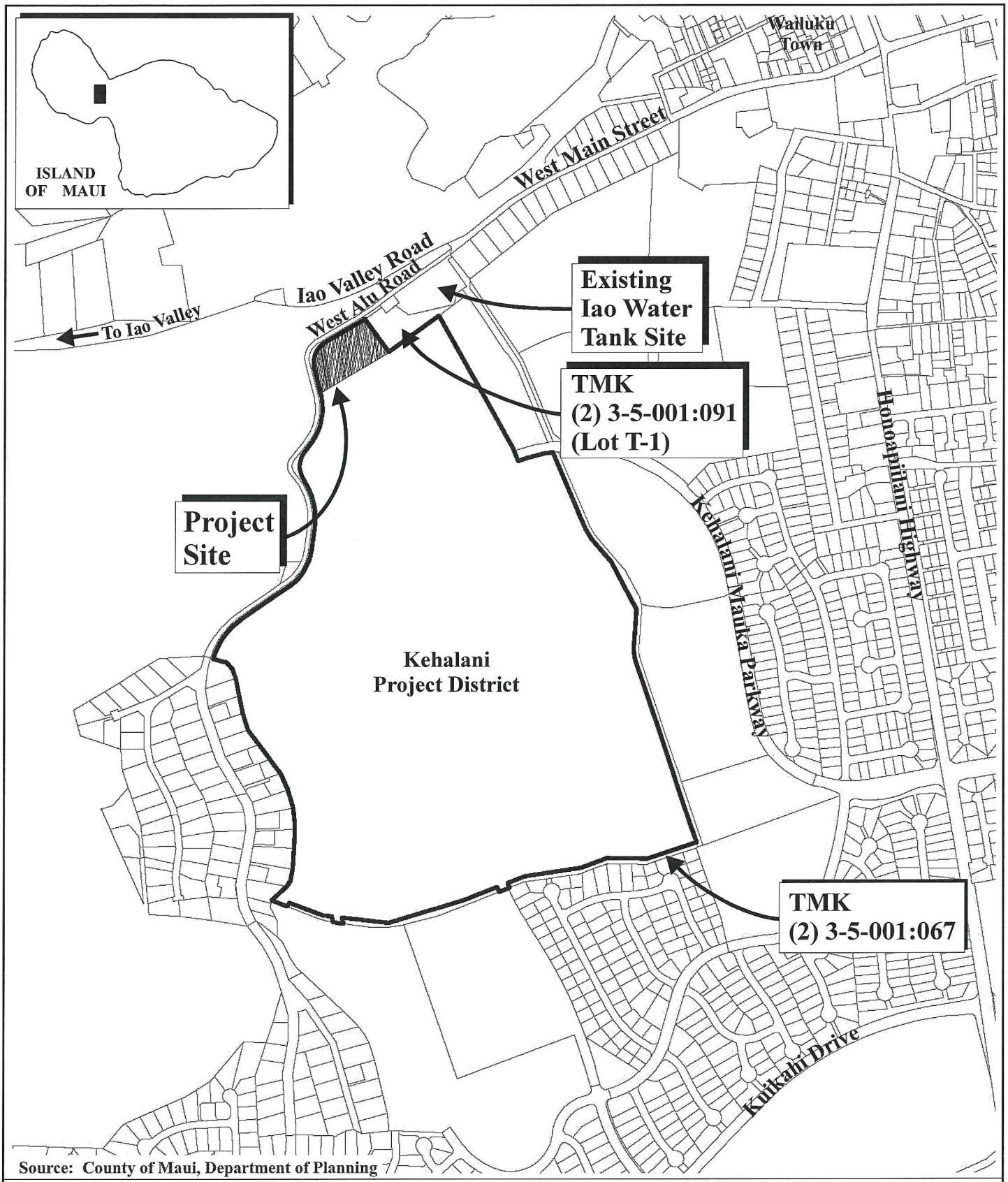


Figure 1 Proposed Iao Water Treatment Plant Upgrades

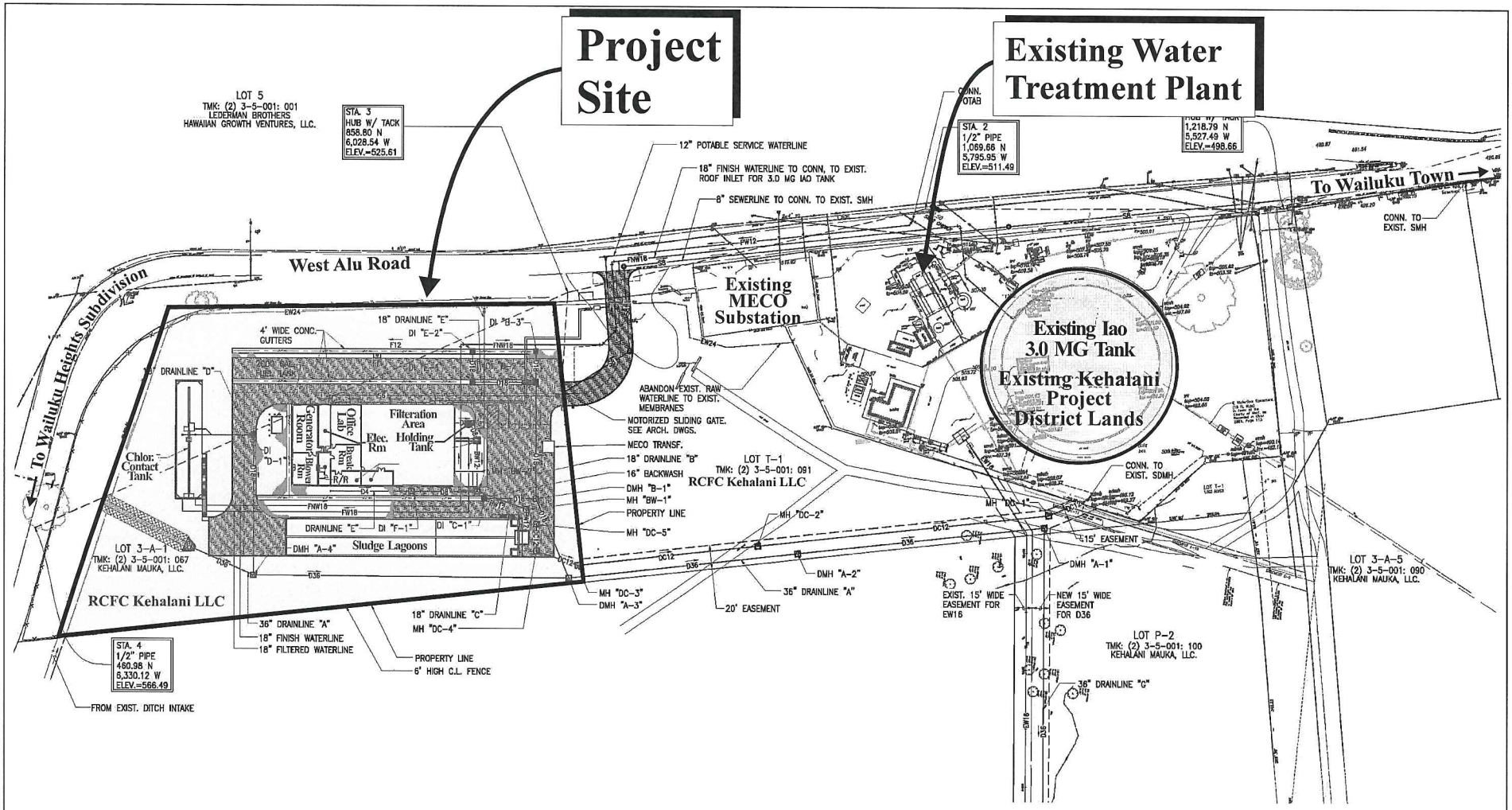
Regional Location Map

0 200 400 800 Feet

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\Regional



Source: Austin, Tsutsumi & Associates, Inc.

Figure 2 Proposed Iao Water Treatment Plant Upgrades

Site Plan

NOT TO SCALE

Prepared for: County of Maui, Department of Water Supply

MUNEKIYO HIRAGA

ATA\Iao WTF Upgrades\Site Plan